KYOCERA

NO. 419-01-50-RA1AW01

CONTAX *Aria*

Repair Manual

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発行

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Optical Equipment Group
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No.	419-01-50-RA1AW01

CONTENTS

A. GENERAL & TECHNICAL INFORMATION

Features ---------- A- 2
Specifications ---------- A- 3
Names of Parts ---------- A- 5
Timing Chart ---------- A- 6
Description of Mechanisms ---------- A- 7
Functions of Switches ---------- A-16
Description of Electric Circuits ---------- A-19
Schematic Diagram ---------- A-25

B. DISASSEMBLY & REASSEMBLY PROCEDURES

Removal of Exterior Parts ---------- B- 2
Removal of Main FPC Ass'y ---------- B- 5
Removal of Mirror Box Ass'y & Shutter Unit ---------- B-11
Disassembly of Winding and Rewinding Mechanism ---------- B-13
Removal of Other Parts ---------- B-16
Disassembly & Reassembly of Ass'y Parts ---------- B-18
Disassembly of Back Cover Ass'y ---------- B-29
Disassembly of Data Back Ass'y ---------- B-30
Parts Modification List ---------- B-35

C. ADJUSTMENT PROCEDURES, ETC.

Adjustments of Mechanisms
- Adjustment of Open F. Stop Signal Contact Position ---------- C- 2
- Adjustment of AV Gear (L) Ass'y Position ---------- C- 3
- Adjustment of Viewfinder Indication Positions ---------- C- 4
- Adjustment of Spot Light Metering Position ---------- C- 5
- Adjustment of Flange Back Distance ---------- C- 7
- Adjustment of Viewfinder Focusing ---------- C- 7

Adjustments of Compensation Values (Manual Adjustments)
- Description of Manual Adjusting Mode ---------- C- 8
- Semiautomatic Adjusting Mode (Adjustments of Dials and A/D Conversion) ---------- C-13
- Exposure Adjustments ---------- C-17
- About Other Adjusted Values ---------- C-24

Others ---------- C-25
- Electric Elements Locating Diagram on Main FPC Ass'y ---------- C-26
- Terminal Connection Diagram ---------- C-27
- Wiring Diagram ---------- C-28

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A. GENERAL & TECHNICAL INFORMATION

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FEATURES

This manual-focus high-class single lens reflex camera is the fruit of our efforts in pursuit of a small, lightweight and easy-to-use high-performance camera.
For light metering, this camera employs not only the center-weighted average light metering and spot light metering system but also an evaluative light metering, which has appeared for the first time on a CONTAX SLR.

1. Small and Light Body

This SLR camera is as small and lightweight as CONTAX S2.
Dimensions: 137 W × 92.5 H × 53.5 D (without the Back Cover Grip)
Weight: about 460 g (without the batteries)

2. Evaluative Light Metering System

The camera employs the evaluative metering system. The picture area is divided into five segments and the light at each segment is measured independently so that even a subject with backlighting or spotlighting can be photographed with almost no exposure compensation. In addition, the camera displays the difference between the values calculated by evaluative metering and center-weighted average metering in the viewfinder. Through this display, the photographer can know how the camera is evaluating the light at the subject.

3. Bright Viewfinder

The easy-to-use manual-focus camera realizes not only a clear, easy-to-see viewfinder but also ensures a sufficient field of view.

4. Custom Function

The photographer can select the following functions for easier use.

- Use of AE Lock activated by depressing the Shutter Release Button halfway.
- A.B.C. exposure order
- Leaving the film leader outside the film cartridge after rewinding
- Rewinding at the end of the film
- Film loading method

5. Flash Auto Setting Function

The TLA 360 Flash Unit, when used together with this camera, indicates the camera's film speed and aperture data on the display panel at the back of the flash unit. In addition to the exposure compensation by the camera body, exposure compensation by the flash unit is available so that the camera used with the flash unit can adjust the balance between flash light and natural light. The TLA 360 Flash Unit is equipped with an auto power on/off function to save power. Even when the flash unit is in the power off status as a result of this auto power off function, depressing the Shutter Release Button halfway will activate the power on function to start charging. Thanks to these auto setting functions, the flash unit and the camera body can be used as a unified system.

6. Shutter

The highly reliable, high-precision shutter operates at high speeds up to 1/4000 second.

7. Multifunctional Data Back D-9

The Data Back D-9 designed only for this camera can record on the film not only date but also exposure data at picture taking.

- Compiled data imprinting function (photographic data of all the frames can be imprinted onto the first two frames of the film).
- Inter-frame imprinting function (data in one selected mode are imprinted between frames of the film).
- Interval shooting function allows fixed point shooting and unattended shooting.

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No.	419-01-50-RA1AW01

CONTAX Aria Specifications

Type	: 35mm focal-plane type AE single lens reflex camera.
Picture Size	: 24x36 mm
Lens Mount	: Contax / Yashica MM mount
Shutter	: Vertical-travel focal-plane shutter.
Shutter Speeds	: 16 sec. - 1/4000 sec. at "Av" and "P"; 4 sec. - 1/4000 sec. at "Tv"; B,X (1/125 sec.), 4 sec. - 1/4000 sec. on manual.
Sync Contacts	: Direct X contact (synchronizing speeds 1/125 sec. or slower) provided with direct contact and sync terminal.
Self-timer	: Electronic self-timer; trips the shutter after 10 sec. delay.
Shutter Release	: Electronic release, provided with a special release socket.
Exposure Control	: ① Aperture-priority auto exposure, ② Shutter-Speed-priority auto exposure, ③ Programmed auto exposure, ④ Manual exposure, ⑤ TTL auto-flash, ⑥ Manual flash.
Metering System	: TTL evaluative metering / center-weighted average light metering / spot metering switchover.
Metering Range	: EV2 - 20 (with an F1.4 lens and ISO 100 film)
Film Speed Range	: ISO 25-5000 for automatic setting with DX code, ISO 6-6400 for manual setting.
AE Lock	: The quantity of light on the image surface is stored in memory.
Exposure Compensation	: +2 EV to −2 EV (can be set in 1/3-step increments).
A.B.C. Mode	: ± 0.5 EV / ± 1 EV exposure compensating values with A.B.C. lever.
Flash Light Control	: TTL direct light control.
Flash Synchronization	: In combination with dedicated flash, the shutter speed is automatically set when the flash is fully charged.
Automatic Flash Setting	: Possible in combination with dedicated flash capable of automatic flash setting.
Second Curtain Synchronization	: Possible in combination with dedicated flash capable of second curtain synchronization.
Viewfinder	: Pentaprism eye-level finder (long eye-point type) •Field of view 95% •Magnification 0.82X (With 50 mm normal lens at infinity, −1 D diop.)
Diopter Adjustment	: Eyepice correction lenses can be attached (8 optional FL type diopter lenses)
Focusing Screen	: Horizontal split-image / microprism type (FU-4) (standard), interchangeable screens (FU type) are also available.
Viewfinder Display	: Flash mark, Shutter speed, aperture value, metering mark, exposure warning mark, exposure meter, manual exposure mark, exposure compensation mark, exposure counter / self-timer remaining time / A.B.C. mode / film end.
Display Panel	: Exposure counter / A.B.C. mode / film speed / self-timer remaining time / elapsed time on bulb exposure / custom function mark, battery warning mark, self-timer mark, continuous shooting mark, single-frame shooting mark, multiple exposure mark.
Film Loading	: Auto loading, film automatically advances to "01" on exposure counter.
Film Advance	: Automatic winding with built-in motor.
Film Rewinding	: Automatic rewinding with built-in motor, automatic stop and mid-roll rewinding possible.
Drive Modes	: Single frame, continuous, self-timer, multiple exposure.
Winding Speed	: Up to approx. 3 frames / sec. on continuous shooting ("C" mode) (with a new battery, at ordinary temperature, as tested according to Contax testing standard).
Exposure Counter	: Display panel and viewfinder, both automatically resetting, additive type.
Accessory Shoe	: Direct X - contact (provided with TLA flash contact).

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Custom Functions	: ① AE lock / unlock by depressing shutter release halfway ② Switching of A.B.C. shooting order ③ Film end is not wound into the cassette ④ Film not automatically rewound when film reaches end ⑤ Film advance method
Camera Back	: Can be opened with camera back opening lever, detachable, with film check window.
Power Source	: Two 3V lithium battery (CR2).
Battery Check	: Automatic check, battery warning mark on display panel.
Battery Capacity	: About 90 rolls of 24-exposure film (with a new battery, at ordinary temperature, as tested according to Contax testing standard)
Other Details	: Aperture stop-down button
Dimensions, Weight	: 137 (W) x 92.5 (H) x 53.5 (D) mm (depth excludes camera back and grip) 460g (excluding batteries)

Specification of the CONTAX Aria DATA BACK D-9

Type	: Multi-function type, data recording and camera control unit.
Coupling to Camera	: Codeless connection via signal coupling contact.
Data Display	: Liquid crystal display
Data Printing System	: Automatic imprinting coupled to shutter.
Data Printing Position	: First two frames on the film, and between the frames.
Confirmation of Data Imprint	: Blinking of collective imprinting warning lamp (on collective imprinting), and blinking of PRINT mark (on collective imprinting and between-the -frames imprinting).
Imprinting Modes	: On collective exposure data imprinting: Exposure data at the time of shooting (exposure compensation value, shutter speed, aperture value, exposure mode). On between-the -frames imprinting: Dates (year/month/day, month/day/year, day/month/year), time (day/hour/minute), exposure data at the time of shooting (exposure compensation value, shutter speed, aperture value, exposure mode), counter data + two characters, desired 6-digit fixed number + two characters, no imprinting.
Interval Shooting	: Start time: Setting on day/hour/minute Interval time: Settable at intervals from 2 sec. to 99 hours 59 min. 59 sec. Number of shots to be taken: 1-99. Confirmation of Interval Operation: Blinking of INT.mark
Mode Switchover	: With "MODE" button
Film Speed	: Automatic setting coupled to ISO setting on the camera.
Calendar	: Auto-calendar for displaying the lower two digits of the year.
Power Source	: Two 3V lithium batteries (CR2025)
Dimensions & Weight	: 135.5 (W) x 56.5 (H) x 20.5(D) mm, 100g (without batteries)

* Specifications and design are subject to change without notice

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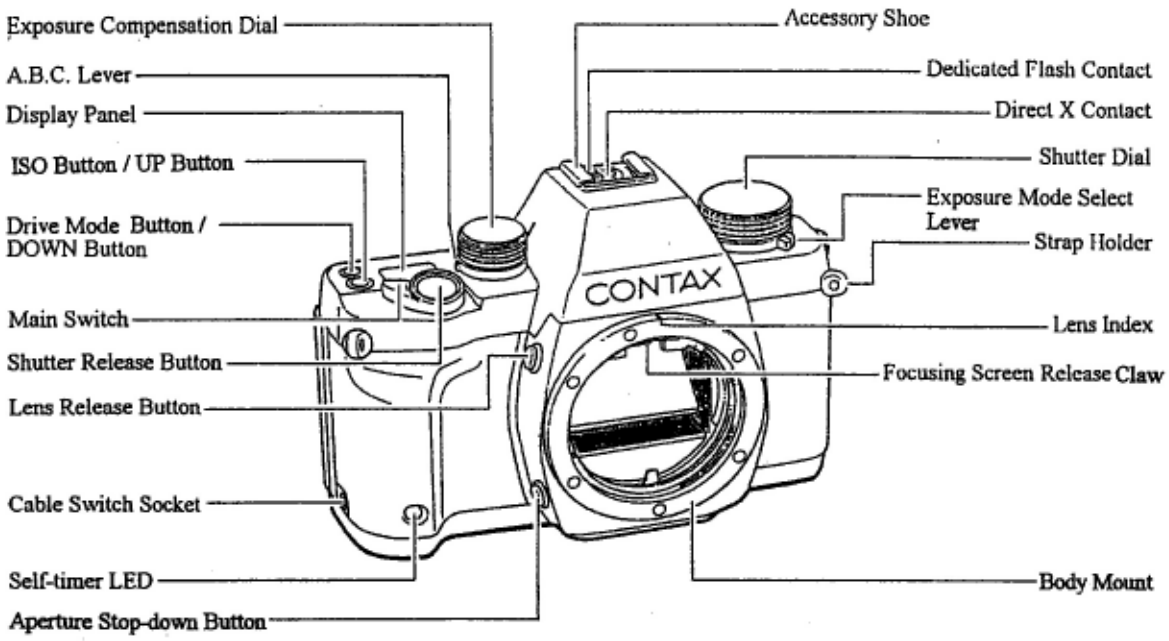
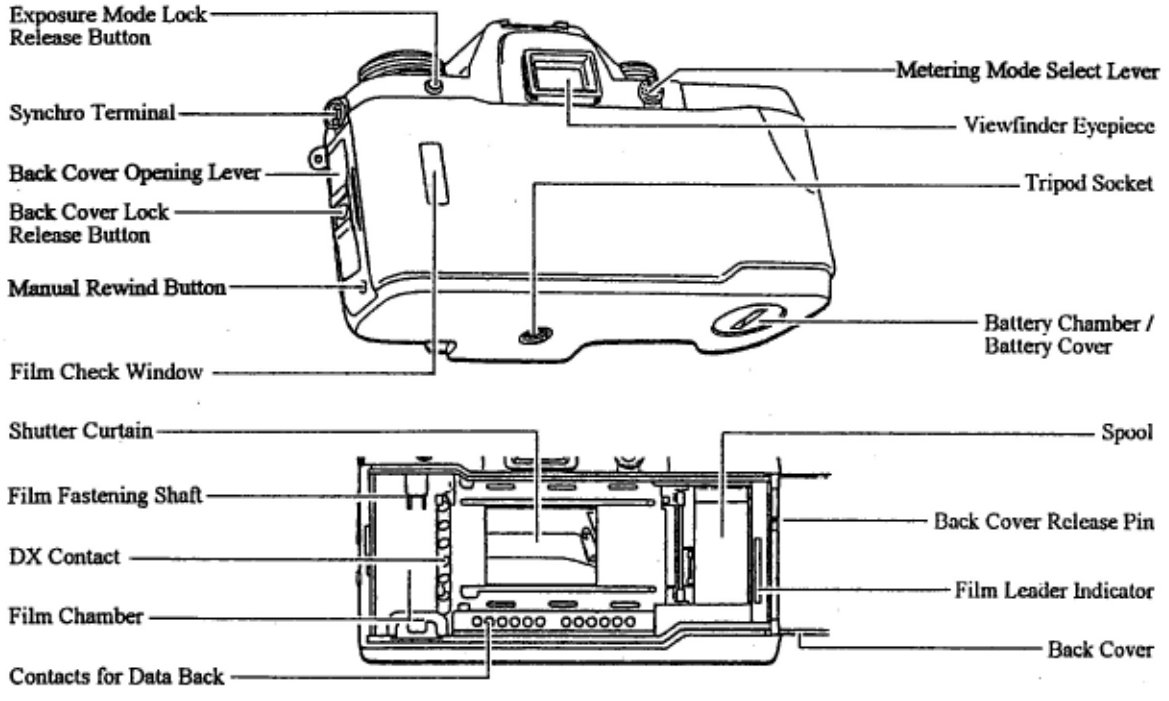
NAMES OF PARTS





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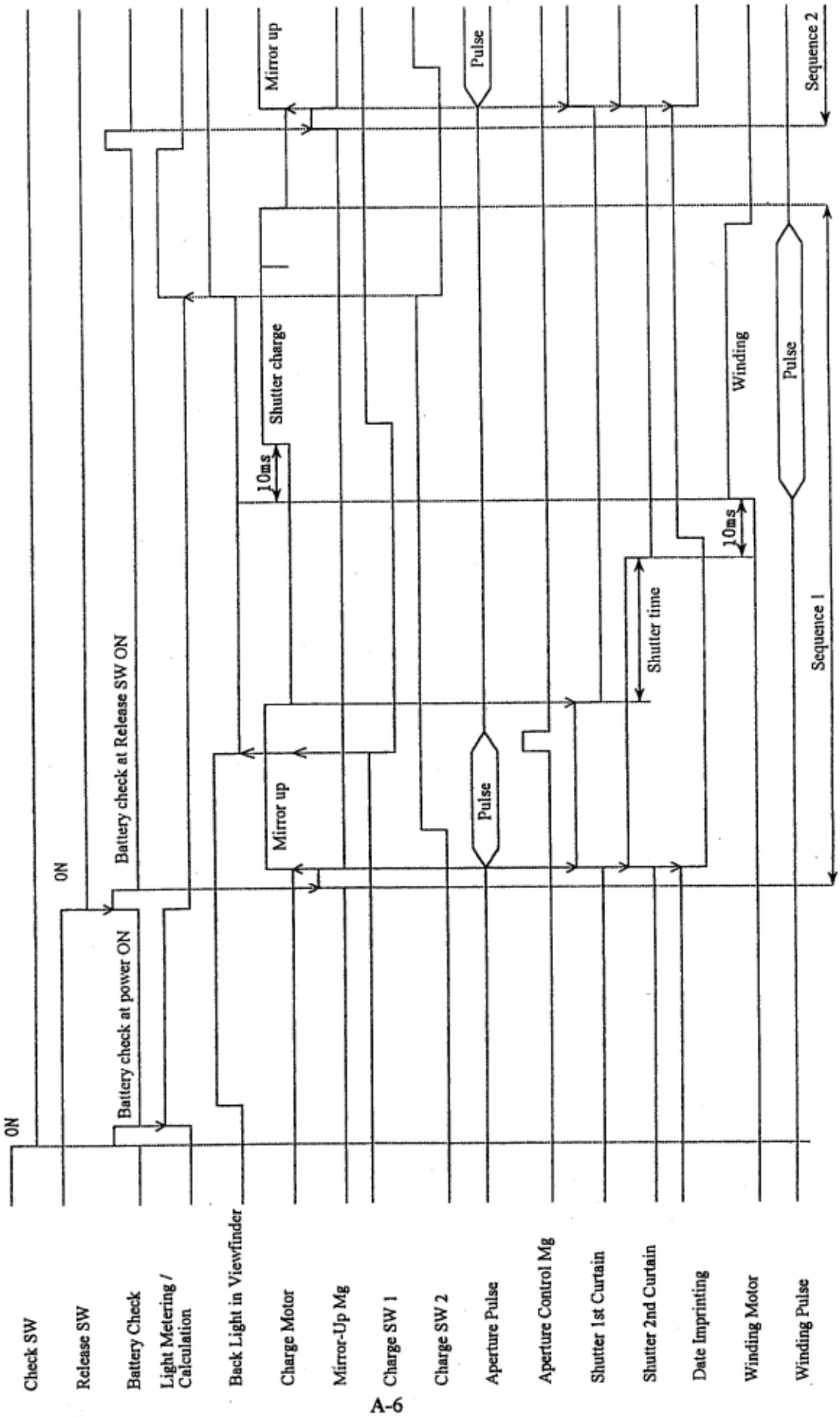
No.	419-01-50-RA1AW01

TIMING CHART



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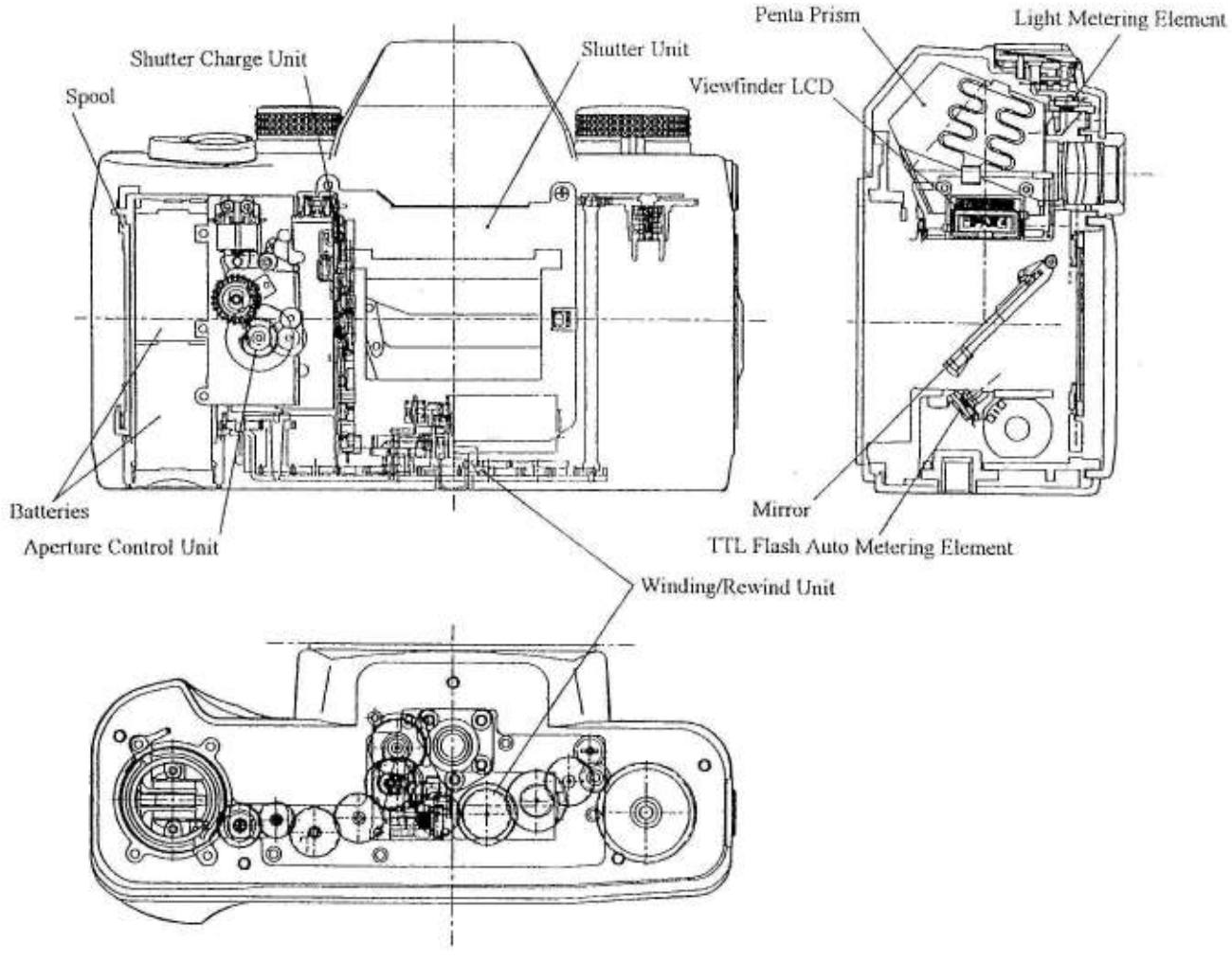
DESCRIPTION OF MECHANISMS

[Internal Structure]

The internal units and parts are arranged effectively to realize this down-sized high-performance camera. The two 3-volt lithium batteries (CR2), as the power source of this camera, are located inside the spool. The main units of the aperture control, mirror drive and shutter drive mechanisms are arranged in the left space inside the camera body. The winding and rewinding mechanism is located at the bottom and the two motors to drive the these mechanisms are placed in the lower space inside the body. With this arrangement, the camera is well balanced.

(Layout of Units)



[Principal Mechanisms]

1. Mirror-Up and Shutter Charge Mechanism

The control mechanism for the mirror, aperture and shutter consists of one motor and two plungers. The shutter release sequence is such that the plungers are operated to disengage the S. Charge Lever first and then the motor is started. Via the speed reduction gear train, the Shutter Cam Gear and Mirror Cam Gear rotate to let the S. Charge Lever retract, thus releasing the trigger of the shutter.
Linked with the S. Charge Lever, the Mirror-Up Lever is also disengage to perform mirror up. At the same time, the Aperture Lever operates to stop down the aperture.

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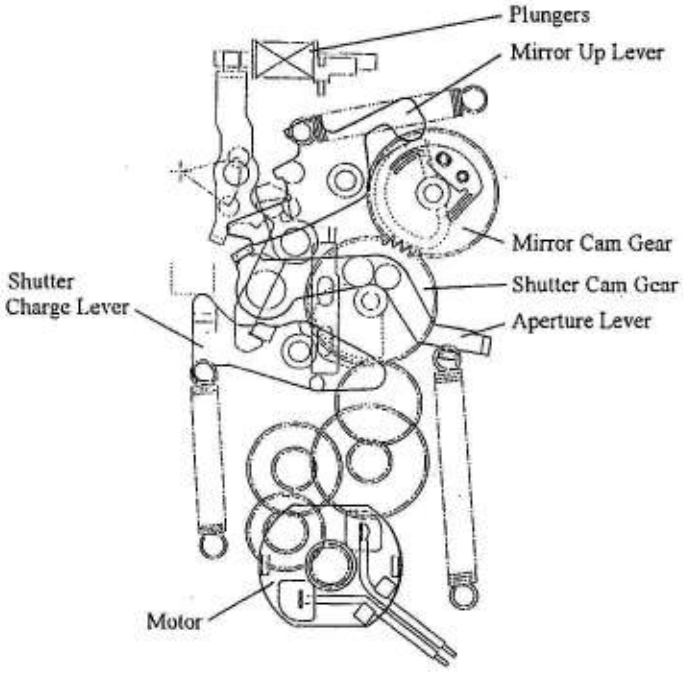
The aperture value is controlled by counting the pulses sent from the encoder which is coupled with the motion of the mechanism. When the number of pulses has reached the predetermined count, the plungers are energized to stop the motion of the mechanism, where the intended aperture value is set.
After the travel of the first and second curtains of the shutter, the motor is started again. By the operation of the motor, the Shutter Cam Gear and Mirror Cam Gear perform mirror down and shutter charge and restore the aperture control mechanism to the original position. The timings for these motions are so distributed that the motor is loaded evenly. The operation of the motor is controlled by the signal sent from the timing switch on the Mirror Cam Gear.

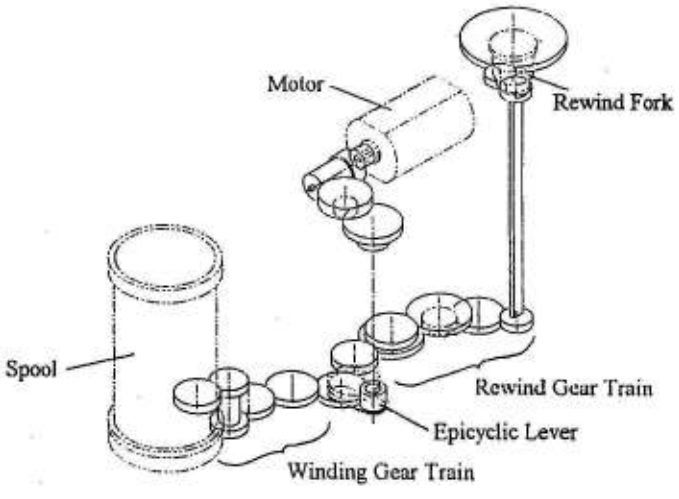
(Mirror-Up & Shutter Charge Mechanism)



2. Film Transport Mechanism

The motor for winding and rewinding is located in the lower center of the camera body. As the motor is switched between forward run and backward run, the Epicyclic Lever position is so changed that the rotating power is transferred to the Winding Gear Train or the Rewind Gear Train to perform winding or rewinding.
At winding, the film travel is monitored by detecting directly the travel of a perforation with a photo-reflector to determine the film stop position. An encoder and photo-interrupter are located at the first stage of the gear train to detect the motion of the drive system precisely, thus ensuring a higher accuracy of frame feed.
Also the drive pulse from the encoder and photo-interrupter enhances the accuracy of imprinting position of the compiled data when the Data Back D-9 is used.

(Film Transport Mechanism)



[Electric Circuit]

The electric circuit consists of two high-speed CPUs and other parts.
The Main CPU controls the shutter, shutter charge, aperture stop-down and winding/rewinding mechanisms and the comprehensive system of the camera. The Sub CPU controls chiefly light metering, flash communication and Data Back communication. In this way, the control of the camera system and mechanisms is performed independently of light metering, flash communication and Data Back communication, which are constantly carried out. Thanks to this independence, the total control of the camera is processed at a high speed.
The external display is controlled by the Main CPU, while the viewfinder display is controlled by the Sub CPU.
The camera is equipped with two motors — one for winding/rewinding only and the other for mirror up, shutter charge/mirror down and aperture stop-down.
The TTL Flash Auto Control Circuit, mounted on the bottom of the Mirror Box, detects the light reflected by the film surface during exposure and controls exposure.
The power supply circuit, designed for power saving, automatically turns power OFF when 16 seconds have passed without any operation of the camera.

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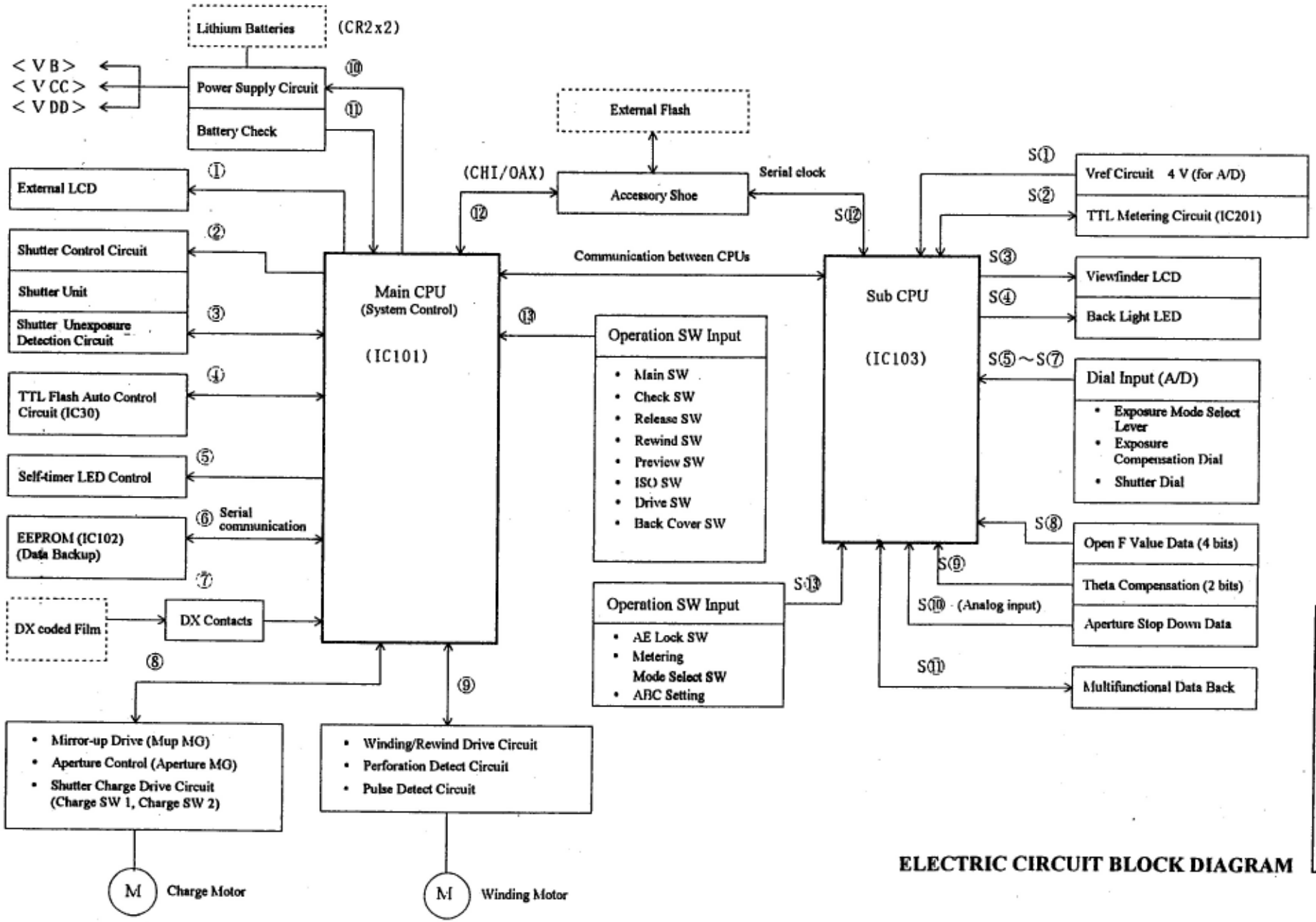

ELECTRIC CIRCUIT BLOCK DIAGRAM

No. 419-01-50-RA1AW01

A-9

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[Functions of the Circuits and Explanation of the Signal Lines Shown in Electric Circuit Block Diagram]

☆ Functions and Signal Lines Associated with Main CPU

1. External LCD

The reflection type LCD indicates film speed (DX, ISO), drive mode (S, C, self-timer mode), multi-exposure mark, battery warning and 7-segment 4-digit display (ISO, exposure counter). The Main CPU circuit is divided into three sections and the LCD is driven by the built-in LCD driver (drive voltage: 5 V).

① LCD (External) : SEG (12 lines) × COM (3 lines) = Max. 36 segments

2. Shutter Drive Circuit

The Shutter Drive Circuit controls the holding of the two magnets for the first and second curtains.
This circuit is part of the Regulated DC Voltage Drive Circuit.

② Main CPU → Shutter Magnet control : 1st curtain control signal, 2nd curtain control signal.

3. Shutter Unexposure Status Detection

To detect the unexposure status of the shutter (shutter has not opened), the photo-reflector located around the aperture of the shutter monitors the motion of the shutter blades.

③ Unexposure status detection : Main CPU → Transistor → Photo-reflector : LED drive
Photo-reflector → CPU : Detection pulse (A/D read in)

4. TTL Flash Auto Control Circuit

This circuit integrates the light reflected by the film while the shutter is open, and stops flash when the optimum amount of light is attained.
The integration start signal and ISO data (serial communication) are input to the IC and the flash stop signal is output from the IC.

④ TTL Flash Auto IC control : Main CPU → TTL Flash Auto IC : CS, SDO, SCK, CHC
TTL Flash Auto IC → Main CPU : CHS → CHI/O → Main CPU

5. Self-timer LED Control Circuit

This circuit makes the LED blink during operation of the self-timer (for 10 seconds).

⑤ Main CPU → Self-timer LED : LED lighting signal

6. Data Backup (EEPROM)

Adjusted values and camera status are stored in EEPROM.

⑥ Serial communication : SCK, SDI, SDO (also used for test adjustments; SCK and SDO are also used with the TTL Flash Auto IC).
Main CPU → EEPROM : EEPROM – CS

7. DX Contacts

These contacts read in the DX code.

⑦ DX Contacts → Main CPU : 5-bit input

8. Mirror Control, Aperture Control, Shutter Charge Drive Circuit, Charge Switch

Mirror up is performed by the Mirror-up Magnet and mirror down is driven by the S. Charge Motor.
Aperture control is such that the S. Charge Motor drives the Aperture Lever and upon the detection of the predetermined number of aperture pulses, the Aperture Magnet is turned ON to stop the Aperture Lever.

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For shutter charge drive, the motor runs only forward so that the cam to move the S. Charge Lever is turned in one direction to perform shutter charge and to retract the S. Charge Lever immediately before shutter travel. The completion of the S. Charge Lever retracting and the completion of shutter charge are detected by the operation of the Charge Switch 1 and Charge Switch 2.
The circuit incorporates a braking function to stop the cam at the correct position upon completion of shutter charge.

⑧ S. Charge Motor drive — Main CPU → Cam drive motor driver : Control signal × 2
S. Charge Lever position detect — Charge SW 1 → Main CPU : Completion of S. Charge Lever retracting
Charge SW 2 → Main CPU : Completion of shutter charge
Mirror-up drive — Main CPU → Mup MG drive circuit : Mup MG control signal
Aperture control — Main CPU → Aperture MG drive circuit : Aperture MG control signal
Main CPU → Photo-interrupter : LED drive
Photo-interrupter → Main CPU : Control pulse

9. Winding/Rewind Drive and Perforation Detect Circuit

The winding and rewind mechanism is driven by one dedicated micro motor. Winding is performed by the forward run of the motor, while rewinding is by the reverse run. The brake function ensures each correct film advance by one frame (8 perforations). Perforation detection is performed by a reflection type photo-reflector. In addition, for inter-frame imprinting of data by the multi-functional Data Back, the detection to ensure precise film transport control is performed by a photo-interrupter.

⑨ Winding drive motor control — Main CPU → Winding motor driver : Control signal × 2
Perforation detection — Main CPU → Photo-reflector : LED lighting signal
Photo-reflector → CPU: Perforation pulse (A/D read in)
Fine film transport detection — Main CPU → Photo-interrupter : LED lighting signal
Photo-interrupter → Main CPU : Control pulse

10. Power Supply Circuit

Circuit voltages are supplied from the four power supplies, namely, VB, VCC, VDD and Vref.
VB, which is equal to the battery voltage, supplies power to the circuits which require large power.
VCC, irrespective of the control signal sent from the Main CPU, outputs regulated DC power through the DC/DC IC to permit operation during PH-OFF (DC/DC operation is OFF). The output from VCC is 5.0 ± 0.2 when the input is 5.4 to 6.5 V with the DC/DC IC turned OFF and when the input is 2.5 to 6.5 V with the DC/DC IC turned ON.
VDD, upon receiving the control signal, turns ON the DC/DC Converter, reinforces VCC and supplies power from the reinforced VCC through a transistor. The output voltage of VDD is 5.0 ± 0.5 V when the input voltage is 3.0 to 6.5 V.

⑩ Main CPU → DC/DC Converter : PH control signal (PH 1)
Main CPU → VDD control transistor : PH control signal (PH 2)

11. Battery Check

The circuit is so set that the battery voltage is divided by resistance and a voltage in proportion to the battery voltage is read in by the CPU.
The transistor turns ON and OFF so that no current flows through the resistors in the power-OFF state.
(Switching by VDD : ON at power ON and OFF at power OFF)

⑪ Battery check circuit →Main CPU: Battery monitor voltage (read in by A/D conversion)
Main CPU → Battery check circuit: PH control signal (also used by PH2 : switching by VDD)

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12. Accessory Shoe

To the Main CPU, only CHI/O (CHS) and AX are connected.

⑫ Main CPU → Transistor → Accessory Shoe : AX signal
Accessory Shoe (CHI/O) → Transistor → Main CPU : CHS

13. Operation Switches

The signals from external operation switches are input to the Main CPU. The operation switches whose signals are input to the Main CPU are limited to those each of which, when operated, brings the camera into the power-ON state.

⑬ Operation Switch → Main CPU: 9 lines

☆ Functions and Signal Lines Associated with Sub CPU

S1. Vref Circuit

This circuit, through the 4 V Regulated DC Voltage IC, supplies the reference voltage Vref for A/D conversion.

S ① Vref circuit → Sub CPU : Vref (for A/D conversion)

S2. TTL Light Metering Circuit (Light Metering IC)

The light metering system permits evaluative metering (5 divisions), center-weighted average metering and spot metering. The light metering range is EV 2 to 20 (50/F1.4 lens, ISO 100), also in evaluative metering. As the light metering element, a 5-divided Light Metering IC is used and the light metering output and temperature output are read in by the CPU through A/D conversion.

S ② Light Metering IC → Sub CPU : TO, PO (read in through A/D conversion : Vref = 4 V)
Sub CPU → Light Metering IC : D1, D2, D3 (SPD select signal)

S3. Viewfinder LCD

The transmission type LCD displays the necessary information in the viewfinder based on externally input data processing and other processes. The circuit is 3-time-divided and uses the LCD driver incorporated in the Sub CPU.

S ③ LCD (in viewfinder) : SEG (22 lines) × COM (3 lines) = 66 segments

S4. Back Light LED for Viewfinder LCD

The Back Light LED for Viewfinder LCD changes its brightness according to the light metering result. This LED is controlled through two control lines and driven by the Sub CPU. (Brightness changes in three steps.)

S ④ (LED control) Sub CPU → Transistor → LED : Back Light LED lighting signal (2 lines)

S5. Exposure Mode Selector Lever

The Exposure Mode Select Lever selects among six modes, namely, Av, Tv, P, M, X and B. The input divided by resistance is read in by the CPU through A/D conversion. For the resistance, a chip resistor is used and three lines of VDD, GND and A/D signal are connected to the resistor.

S ⑤ Exposure Mode Select Lever → Sub CPU : A/D conversion (1 line)

S6. Exposure Compensation Dial

This dial is a turning type with a compensation range of ± 2 EV. It allows 13-step compensation in increments of 1/3 EV. The input divided by resistance is read in by the Sub CPU through A/D conversion. For the resistance, a chip resistor is used and three lines of VDD, GND and A/D signal are connected to the resistor.

S ⑥ Exposure Compensation Dial → Sub CPU : A/D conversion (1 line)

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S7. Shutter Dial
This dial is a turning type that allows setting of 15-step shutter speeds from 4 seconds to 1/4000 second in 1 TV increments. The input divided by resistance is read in by the Sub CPU through A/D conversion. For the resistance, a chip resistor is used and three lines of VDD, GND and A/D signal are connected to the resistor.

S ⑦ Shutter Dial → Sub CPU : A/D conversion (1 line)

S8. Open F Value Data
Data input in a 4-bit gray code.

S ⑧ Open F Value P.C. Board → Sub CPU : 4-bit gray code input

S9. Theta Compensation Input
The presence or absence of theta compensation or the lens which can not cope with theta compensation is identified by a 2-bit input.

S ⑨ Theta Compensation Board → Sub CPU : 2-bit input

S10. Aperture Stop-down Value Data
The data on aperture stop-down position is read in by A/D input.

S ⑩ Aperture stop-down value (AV Board) → Sub CPU : A/D input

S11. Multifunctional Data Back
To connect the Multifunctional Data Back, the camera is equipped with 11 signal contacts, which are the contacts for serial communication, CS and other signals (8 signals in total) and those for W-Up connected to the Main CPU, shutter release signal and GND.

S ⑪ Sub CPU → Data Back contacts : serial (SCK, SDO), CS, PRN, DHS
Data Back contacts → Sub CPU : serial (SD1), TMP, LMP

S12. Accessory Shoe
To the Sub CPU, the flash communication line is connected.

S ⑫ Sub CPU → Flash Unit : serial clock
Flash Unit → Sub CPU : serial DA

S13. Operation Switches
The signals from external operation switches are input to the Sub CPU. The operation switches whose signals are input to the Sub CPU are those which, even when operated, do not bring the camera into the power-ON state.

S ⑬ Operation switches → Sub CPU : 5 lines

★ Communication between CPUs
For communication, access is made only from the Main CPU.
The communication lines consist of a 4-bit bus line, two handshake buses and two timing signal lines.

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[Display]

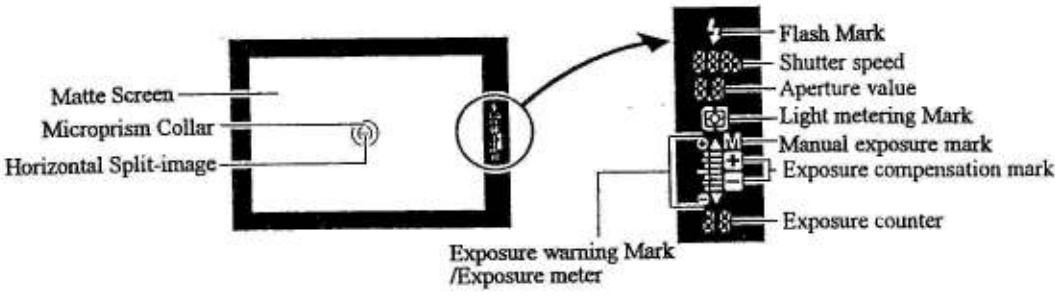
1. Viewfinder Display

For display in the viewfinder, an LCD is employed and the brightness of the back light LED is changed in three steps according to the brightness of the subject so that the display is always easily seen.
The display, located at right in the viewfinder, shows a flash ready indicator, shutter speed, aperture, light metering indicator, manual exposure mark, exposure compensation mark, exposure warning/exposure meter and exposure counter.

The viewfinder display appears at one of the following operations and automatically goes out 16 seconds later for power saving.

① The Main Switch is turned ON.
② The Shutter Release Button is depressed halfway with the Main Switch turned ON.
In addition, the display is kept on for another 16 seconds when the position of a dial or the like is changed.

< Viewfinder Display >



Flash Mark :
- When the TLA Flash Unit is used, the flash mark" ϟ " lights up upon completion of flash charge.
- After flash firing, the flash mark " ϟ " blinks when the condition of the subject is within the allowable range for TTL Flash Auto Control.

Shutter Speed :
- The display shows shutter speeds ranging from 1/4000 second to 16 seconds.
  In manual mode : shutter speed is displayed in increments of one step (4" ~ 4000)
  In auto mode : shutter speed is displayed in increments of 1/2 step (16" ~ 4000)

Aperture Value :
- In the Aperture Priority AE (Av) mode or Manual Exposure (M) mode, the display shows the manually set aperture value.
- In the Shutter Speed Priority AE (Tv) mode or Programmed AE (P) mode, the display shows an aperture value appropriate to the shutter speed.

Light Metering Mark :
- The display in the viewfinder changes according to the mode selected by the Metering Mode Select Lever.
  Center-weighted average light metering mode : " [ ] " lights up.
  Spot light metering mode : " [•] " lights up.
  Evaluative light metering mode : " [▣] " lights up.
- While the AE Lock function is working, the display blinks (2 Hz) as follows :
  Center-weighted average light metering mode : " [ ] " mark blinks.
  Spot light metering mode : " [•] " in " • " mark blinks.
  Evaluative light metering mode : " [▣] " in " ▣ " mark blinks.

M Mark :
"M" mark appears when the Exposure Mode Select Lever is set to the manual exposure position "M"or "X".

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Exposure Compensation Mark :

"+" or "–" mark will blink when the Exposure Compensation Dial is set anywhere other than "0".

Exposure Warning Mark / Exposure Meter

(1) Exposure meter display

The display shows the following data according to exposure mode :

① Only displayed at evaluative light metering in an auto exposure mode (Tv, Av or P), the exposure meter shows the difference from the center-weighted average light metering value.

② In the manual exposure (M) mode or in shooting with flash (X), the exposure meter shows the difference between the exposure setting and the correct exposure (for the set light metering mode).

③ The exposure meter does not displayed during photography with Bulb.

(2) Exposure warning mark display

In an auto exposure mode (Av, Tv or P), the overexposure mark "▲" or underexposure mark "▼" indicating deviation from the exposure control range will blink.

Exposure Counter :

The exposure counter shows the number of exposed frames of the film (a number between 00 to 39 or E for any number of 40th and above). It also shows the following information:

- Remaining time will the self-timer is operating (10 seconds to 00).
- Operation sequence at A.B.C. photography (three-frame continuous automatic exposure compensation).
- Completion of exposure of all frames of the film.

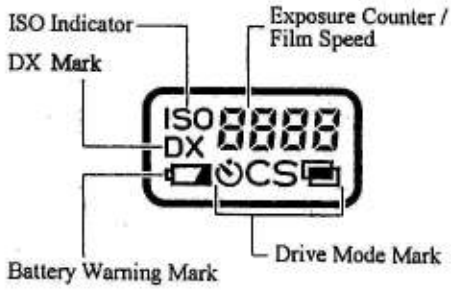
2. Display Panel

Exposure Counter / Film Speed :

This part of the Display Panel shows he number of exposed frames of the film. It also shows the film speed when the ISO button is pressed. With film speed set to "DX", this section of the display shows the film speed read by DX when a DX-coded film is used. The display also indicates the following particulars :

- The remaining time while the self-timer is operating.
- Exposure time during photography with Bulb
- A.B.C. exposure order
- Custom function setting
- Completion of exposure of all frames of the film.

< Display Panel >



ISO Mark :

The ISO mark appears when a film speed is displayed or a film speed is set.

DX Mark :

The "DX" mark is always displayed during automatic setting by a DX code.

Battery Warning Mark :

The battery warning mark appears to indicate that the time for replacing the batteries has come.

Drive Mode Mark :

Self-timer mode " ⏲ "
Single-frame shooting mode " S "
Continuous-frame shooting mode " C "
Multiple exposure mode " ▣ "

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FUNCTIONS OF SWITCHES

< External Operation Switches >

(1) Main Switch
This switch turns ON/OFF the power to the camera and switches AE Lock.

OFF	Main Switch OFF
↓↑	
ON	Main Switch ON
↓↑	
AEL	AE lock (Main Switch is ON)

(2) Check Switch
When the Shutter Release Button is depressed halfway with the Main Switch turned ON, the Check Switch turns OFF → ON ("H"→"L") so that the circuit power is turned ON, the camera starts AE light metering and the viewfinder LCD lights up. Then the camera will hold the power (for 16 seconds).

(3) Release Switch
When the Shutter Release Button is depressed all the way with the Main Switch turned ON, the Release Switch turns OFF → ON ("H"→"L") so that the shutter operates and at the same time, the viewfinder LCD goes out. However, the External LCD keeps indicating the data.

(4) Shutter Dial Switch
This switch sets a shutter speed.
1/4000 to 4 seconds (15 steps)

(5) Exposure Compensation Dial Switch
This switch sets an exposure compensation value.
– 2 to + 2 EV (in increments of 1/3 EV) (13 steps)

(6) A.B.C. Switch
This switch selects a bracketing range for 3-frame continuous exposure control.

0	A.B.C. setting OFF
↓↑	
0.5	Setting of A.B.C. operation of ± 0.5 EV
↓↑	
1	Setting of A.B.C. operation of ± 1.0 EV

(7) Exposure Mode Switch
While pressing the Exposure Mode Lock Release Button, turn the Exposure Mode Select Lever to set an exposure mode.

AV	Aperture Priority AE
↑↓	
TV	Shutter Speed Priority AE
↑↓	
P	Programmed AE
↑↓	
M	Manual exposure
↑↓	
X	Shooting with flash
↑↓	
B	Bulb

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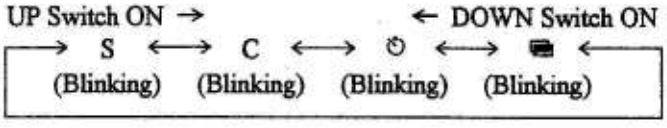
(8) Drive Mode Switch / Down Switch

① When the Drive Mode Button is pressed, this switch turns OFF → ON ("H" → "L"). Pressing the Drive Mode Button for more than 1.2 seconds will set the drive setting mode.
Upon setting the drive setting mode, the external LCD indicates the current drive setting, blinking at 2 Hz.

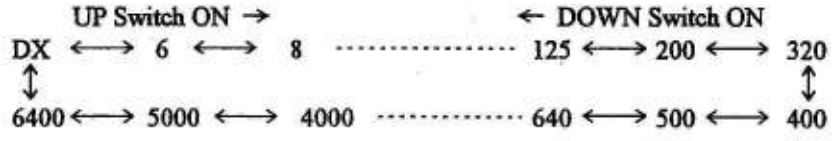
② After the detection of pressing the Drive Mode Button once at a successful setting of the drive setting mode, the drive setting is changed in the UP direction by the ISO Button (UP Switch) or in the DOWN direction by the Drive Mode Button (DOWN Switch).



(9) ISO Button Switch / UP Switch

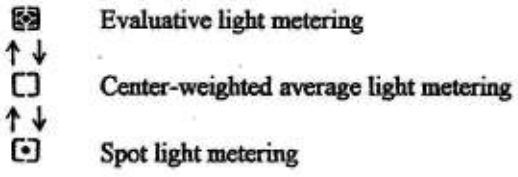
① When the ISO Button is pressed, this switch turns OFF → ON ("H" → "L"). Upon detecting "L", the camera enters ISO check mode and the external LCD indicates the current film speed setting.

② When the ISO Button is pressed in the ISO check mode for more than 1.2 seconds, the ISO setting value blinks at 2 Hz and the mode changes to ISO change mode.
The ISO setting value is changed in the UP direction by the ISO Button (UP Switch) or in the DOWN direction by the Drive Mode Button (DOWN Switch).



(10) Metering Mode Select Switch

This switch selects a light metering mode.



(11) Rewind Switch

Whether the Main Switch is ON or OFF, pressing the Manual Rewind Button will turn ON the Rewind Switch to start film rewinding operation.

(12) Preview Switch

When the Main Switch is ON and the exposure mode is "AV", "TV", "M", "P", "X" or "B", pressing the Aperture Stop-down Button will turn ON the Preview Switch and stop down the lens to the aperture value set on the Lens.
AV, M, X, B ---------- Lens is stopped down to the preset aperture value.
TV, P ---------- Lens is stopped down to the aperture value obtained by arithmetic operation.

< Internal Mechanical Switches >

(13) Back Cover Switch

This switch detects the opening → closing of the Back Cover.

"H" ---------- Back Cover closed
"L" ---------- Back Cover open

Upon detection of the opening → closing of the Back Cover, the camera starts blank shots advance.

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(14) DX Contact Switch

This contact switch detects the DX code of the film cartridge and reads in a film speed according to the DX code.

① Setting range: ISO 25 to 5000 (in 1/3 EV steps)

② Detection timing
100 msec after the detection of the opening → closing of the Back Cover.

③ For a film without a DX code, ISO 100 is read in.

(15) Open F Value Input Switch (4 bits)

This switch detects the Open F value of the Lens mounted.

(16) Theta Compensation Switch

With the MM Lens mounted on the camera, this switch operates coupled with the theta setting pin of the Lens. It converts the theta compensation value to an electric signal and detects the presence or absence of theta compensation.

θ Compens. Code		Lens Type
LENS1	LENS2	
L	H	MM Lens without θ compensation
H	L	MM Lens with θ compensation
H	H	AE Lens

(17) Aperture Information Switch

With a Lens Unit mounted, the mechanism of this switch is engaged with the Aperture Coupling Gear of the Aperture Ring Holding Plate Ass'y and the switch A/D-converts the electrical signal of the aperture value of the Lens (position of the Aperture Coupling Ring) and thus detects the stop-down value of the Lens.

(18) Charge Switch 1 and Charge Switch 2

The Charge Switches are incorporated in the MS Base Plate Ass'y and coupled with the S. Charge Motor.
These switches detect the completion of mirror up or mirror down and shutter charge. There are two Charge Switches, namely, Charge Switch 1 and Charge Switch 2.

○ The completion of mirror up is detected by the turning "H" → "L" of the signal from the Charge Switch 1.

○ The completion of mirror down and the completion of shutter charge are detected by the turning "L" → "H" of the signal from the Charge Switch 1 and the turning "H" → "L" of the signal from the Charge Switch 2.

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DESCRIPTION OF ELECTRIC CIRCUITS

1. Power Supply Circuit

(1) Constitution

This circuit outputs each voltage under control of the Main CPU (IC101). It also detects a battery voltage drop and resets the Main CPU (IC101) by hardware.

(2) Description of Power Supply Lines

- VCC : Power to CPU

At start of camera operation, IC101 turns PH1 "L", so that IC105 (DC/DC Converter) becomes active and starts switching boosting. IC105 boosts the voltage at Pin 6 to 5.5 V and outputs 5 V (VCC) at Pin 5 through the internal series regulator.

In standby mode, IC101 turns PH1 "H", thus stopping the switching operation. Then the camera enters the low power consumption state. In this state, the voltage at the battery is supplied through the coil L101, the Schottky diode in Q105 and the above-mentioned series regulator, so that VCC is almost the same as the battery voltage.

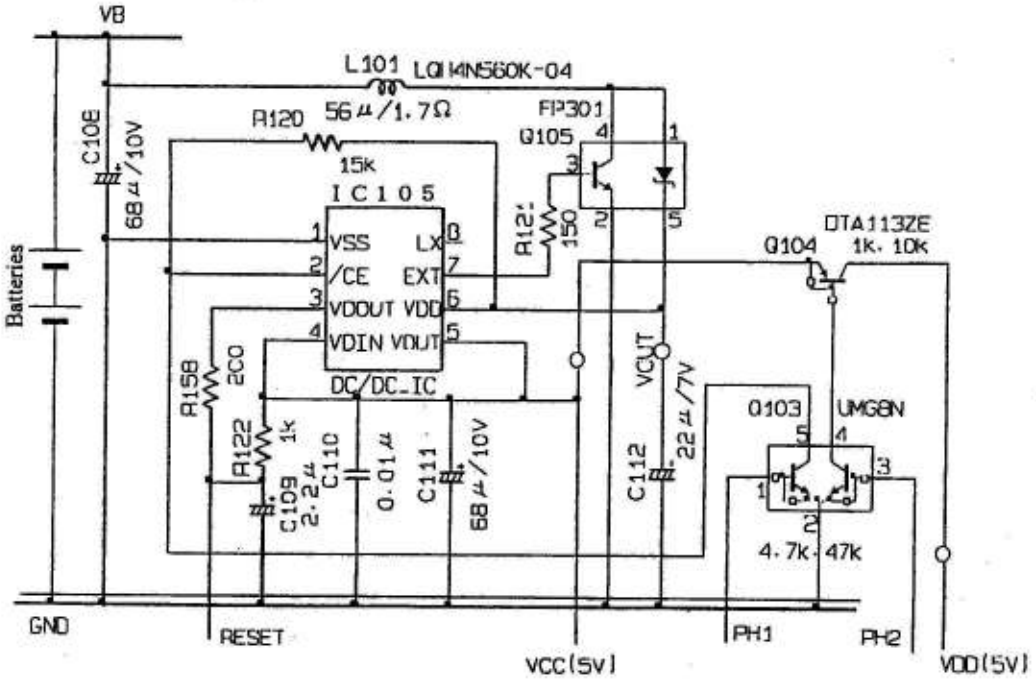
- VDD : Power to peripheral circuits

After completion of the above-mentioned VCC boosting at start of camera operation, IC101 turns PH2 "L", thus turning Q104 ON to supply 5.0 V to the VDD line.

In standby mode, IC101 turns PH2 "H" to turn OFF the VDD line.

- Vref of IC103 : Reference voltage for A/D conversion

This voltage is used as the reference voltage for the A/D conversion in IC103 (Sub CPU). IC104 generates this voltage at VDD. Since this voltage is 4.0 V, the Vref for all the A/D conversion in IC103 is only 4.0 V.



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2. Battery Check Circuit

(1) Battery Check Timing

- Initial battery check : at reset start and at power ON
- Mechanical operation battery check : immediately before blank shots advance, mirror up start and rewinding
- Battery check immediately before winding during use of Bulb shutter

(2) Indications of Battery Warning Mark

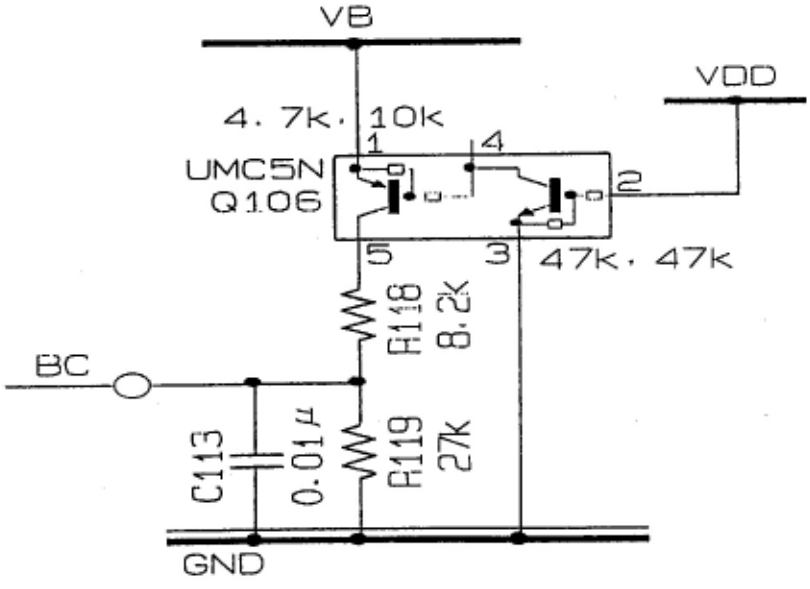
LCD			VB at Battery Check
LCD lighting,	Battery warning mark off	(normal operation)	4.65 V or higher
LCD lighting,	Battery warning mark lighting	(warning)	4.65 to 4.4 V
LCD off,	Battery warning mark blinking	(operation prohibited)	4.4 V or lower

(3) Constitution

The Battery Check Circuit consists of Q106, R118, R119 and C113.

(4) Functions

VB (battery voltage) divided by R118 and R119 is input directly to the A/D terminal of IC101, where the voltage is checked. This voltage is stabilized by C113. Also when VDD is OFF, Q106 turns OFF to cut off the current to be consumed by these resistors. The voltage input to the port for A/D conversion is as follows :



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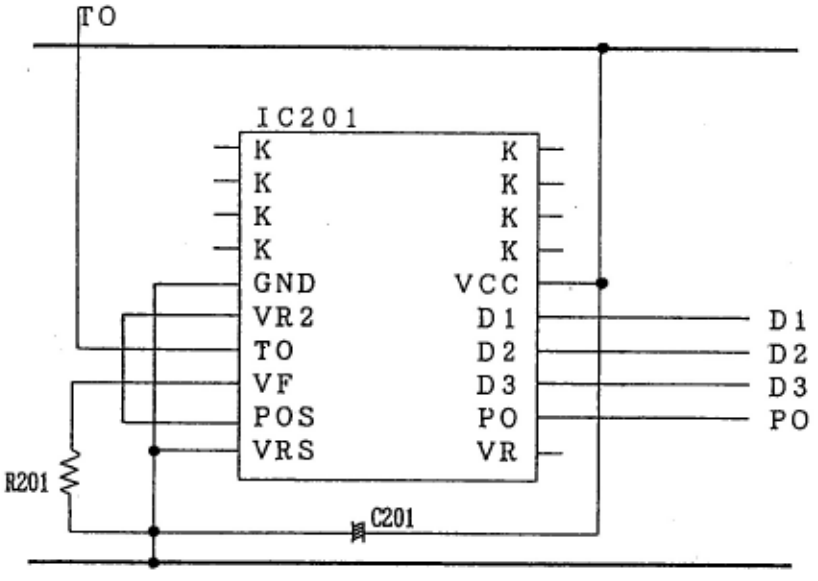
3. Light Metering Circuit

(1) Outline

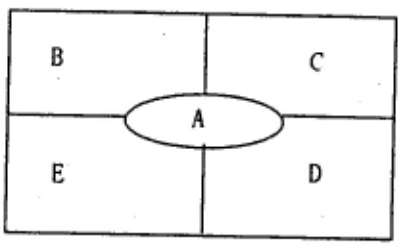
- Light metering output : The 5-division light metering IC201 incorporating SPDs logarithmically compresses the photocurrent and convents it to a voltage linear to the EV value.
  The combinations of signal levels at D1 to D3 of the light metering IC permit a selection of light metering output among the 5 divided patterns.
- Temperature dependence : Since light metering output is dependent on temperature, IC101 temperature-compensates the light metering output. For this compensation, IC201 outputs the necessary temperature data as a voltage.

(2) Description of Control Terminals

Terminal Name	Function	Description of Function
PO	Light metering output	Outputs a voltage representing the light metering value for the pattern selected by D1 to D3.
TO	Temperature sensor output	Outputs voltage linear to temperature.
D1 to D3	Pattern selection of light metering output	Selects one pattern to be output at PO among five light metering patterns.



Input	D1	–	L	H	L	H	–
	D2	H	H	H	L	L	L
	D3	H	L	L	L	L	H
Output	PO	A	B	C	D	E	VR2



* VR2 : reference voltage 2

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4. Drive Circuit

4-1. Winding and Rewinding Circuit

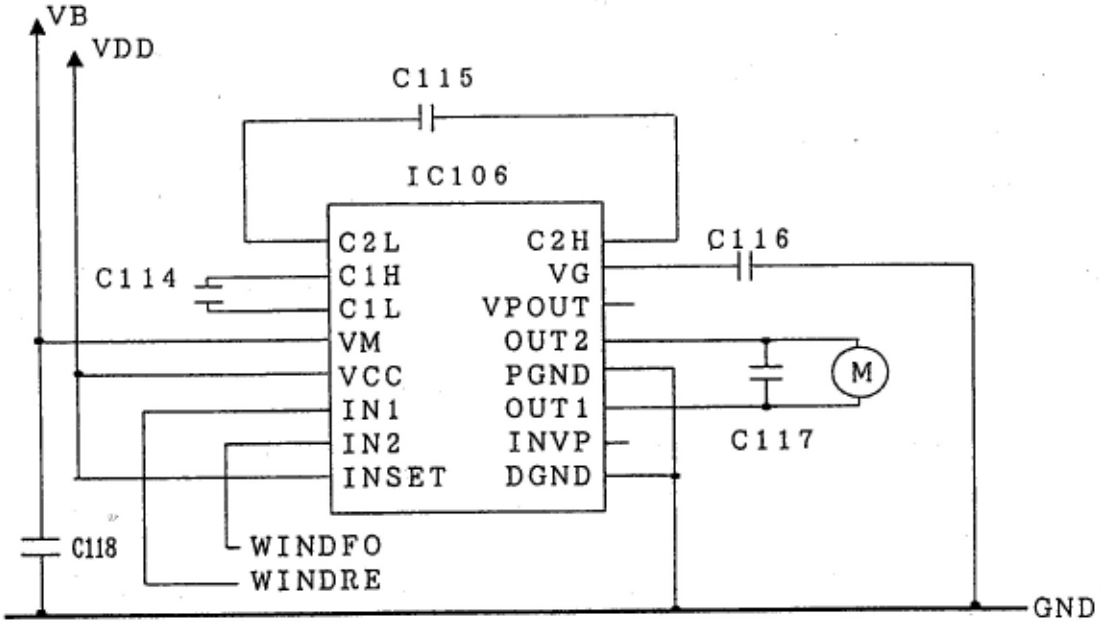
(1) Constitution

This circuit consists of the Drive IC (IC106) and the surrounding capacitors (C114 to C118).
The Drive IC consists of the H Bridge Circuit (comprising MOS transistors) and its predriving circuit.
The surrounding capacitors are used in the charge pump (voltage boosting) circuit for the voltage to drive the gates of the MOS transistors.
The Drive IC (IC106) is only used to drive the winding and rewinding mechanism. It is controlled by the IC101 (Main CPU).

(2) Functions

The control terminals are controlled by the Main CPU (IC101) as follows :

Pin No.	Terminal Name	Signal Name	Stop	Winding	Rewinding	Brake
62	P00	WINDFO	L	H	L	H
61	P01	WINDRE	L	L	H	H



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4-2. Shutter Charge Motor Drive Circuit

(1) Constitution

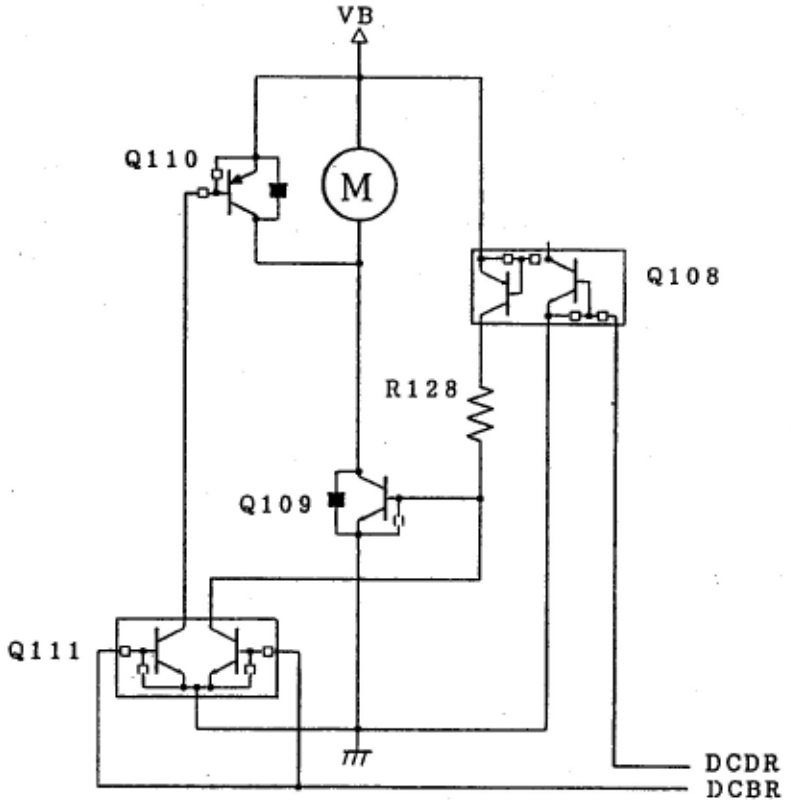
This circuit consists of the transistor (Q109) for driving, the transistor (Q110) for braking and the transistors (Q108 and Q111) for their predriving, and the resistor (R128).

(2) Functions

The control terminals are controlled by the Main CPU (IC101) as follows :

Pin No.	Terminal Name	Signal Name	Stop	Drive	Brake
50	P04	SCDR	L	H	L
49	P05	SCBR	L	L	H

* Shutter charge is controlled by one-way rotation.



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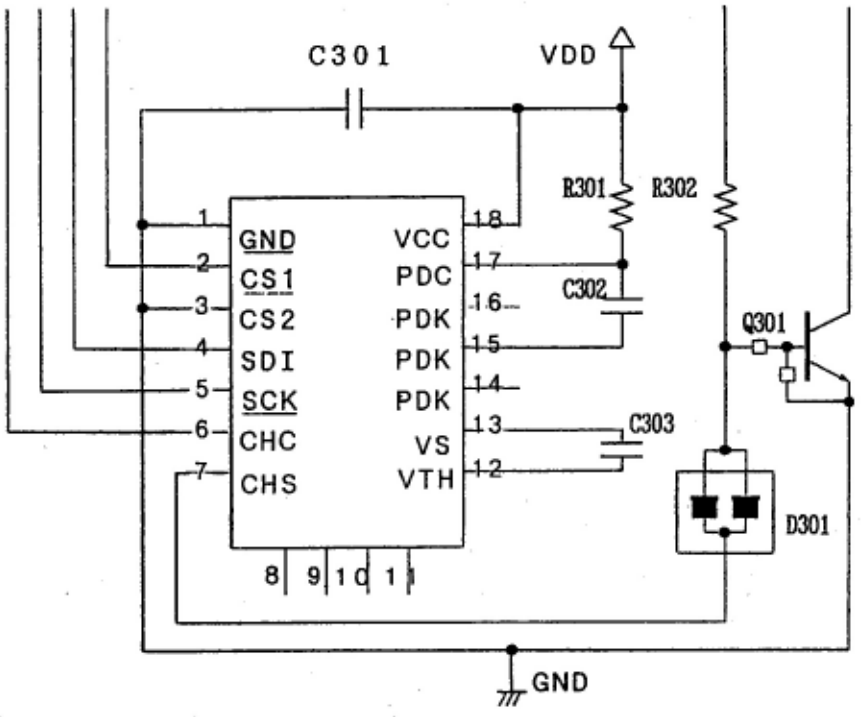
5. TTL Flash Auto Control Circuit

(1) Outline

- TTL Flash Auto Control output : The TTL Flash Auto IC (IC301) starts integration (accumulation of charges in C302) upon receiving the start signal (CHC : L) from the Main CPU. When the integral voltage has reached the reference voltage (VTH), IC301 outputs the stop signal (CHS : H). This CHS signal is output through D301 to the CHI/O terminal. The CPU, upon receiving the inverted CHS signal (CHS signal) via Q301, conducts TTL Flash Auto indication.
- Reference voltage : The reference voltage VTH varies with ISO values. Each ISO value is transferred in the form of 5-bit data by serial communication and converted to a voltage in IC301.

(2) Description of Control Terminals

Terminal Name	Function	Description of Function
CHC	Start signal input for TTL Flash Auto control	Conducts TTL Flash Auto operation only during "L".
CHS	Stop signal output for TTL Flash Auto control	Stops flash firing at "H".
CHCS	Chip select input	Selects this IC at "L". (By serial communication)
SCK	Serial clock input	Clock to transfer ISO data by serial communication.
SO	Serial data input	Data line to transfer ISO data by serial communication.



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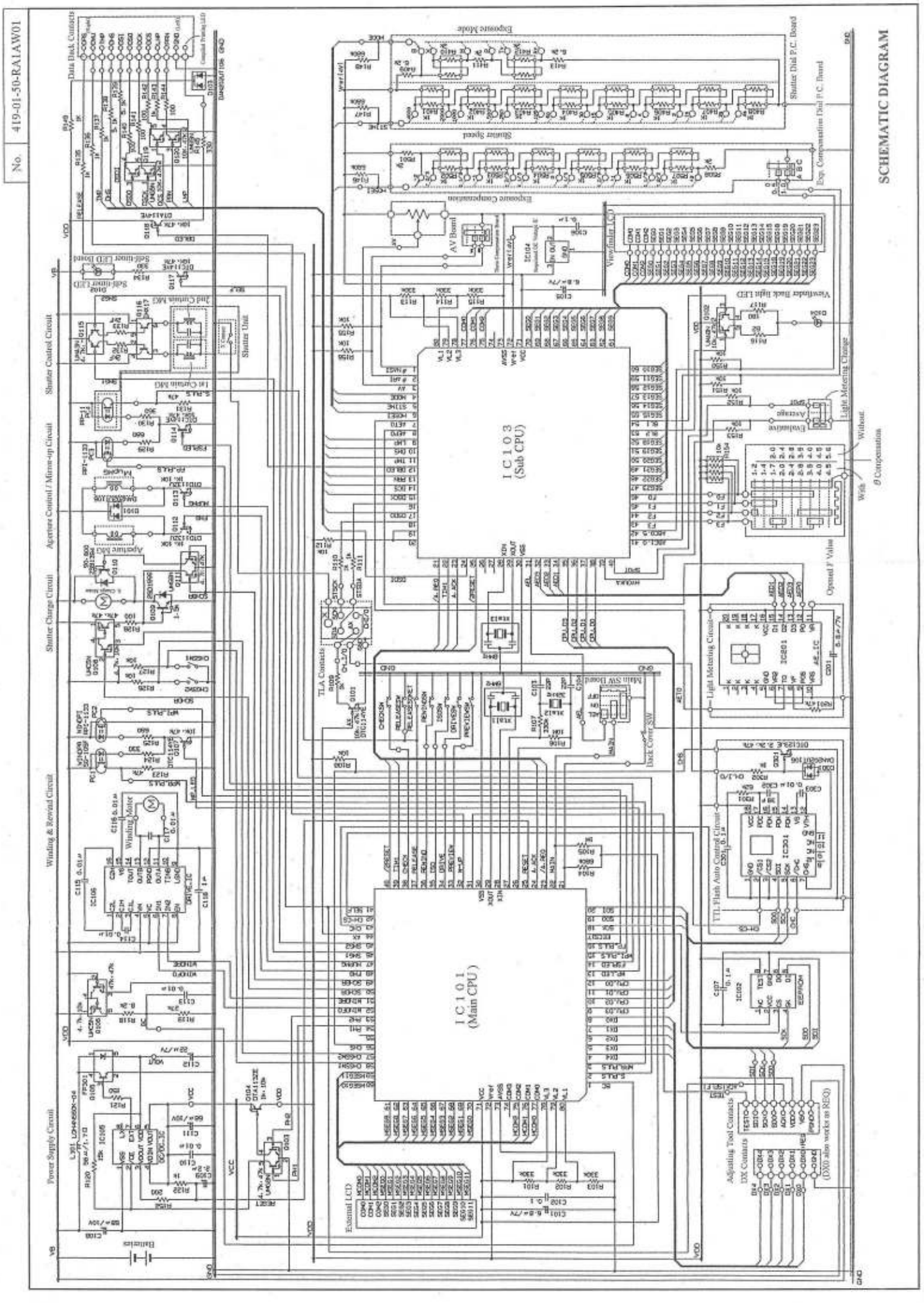

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B. DISASSEMBLY & REASSEMBLY PROCEDURES

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B-1. REMOVAL OF EXTERIOR PARTS

[Chart for Removal of Exterior Parts]

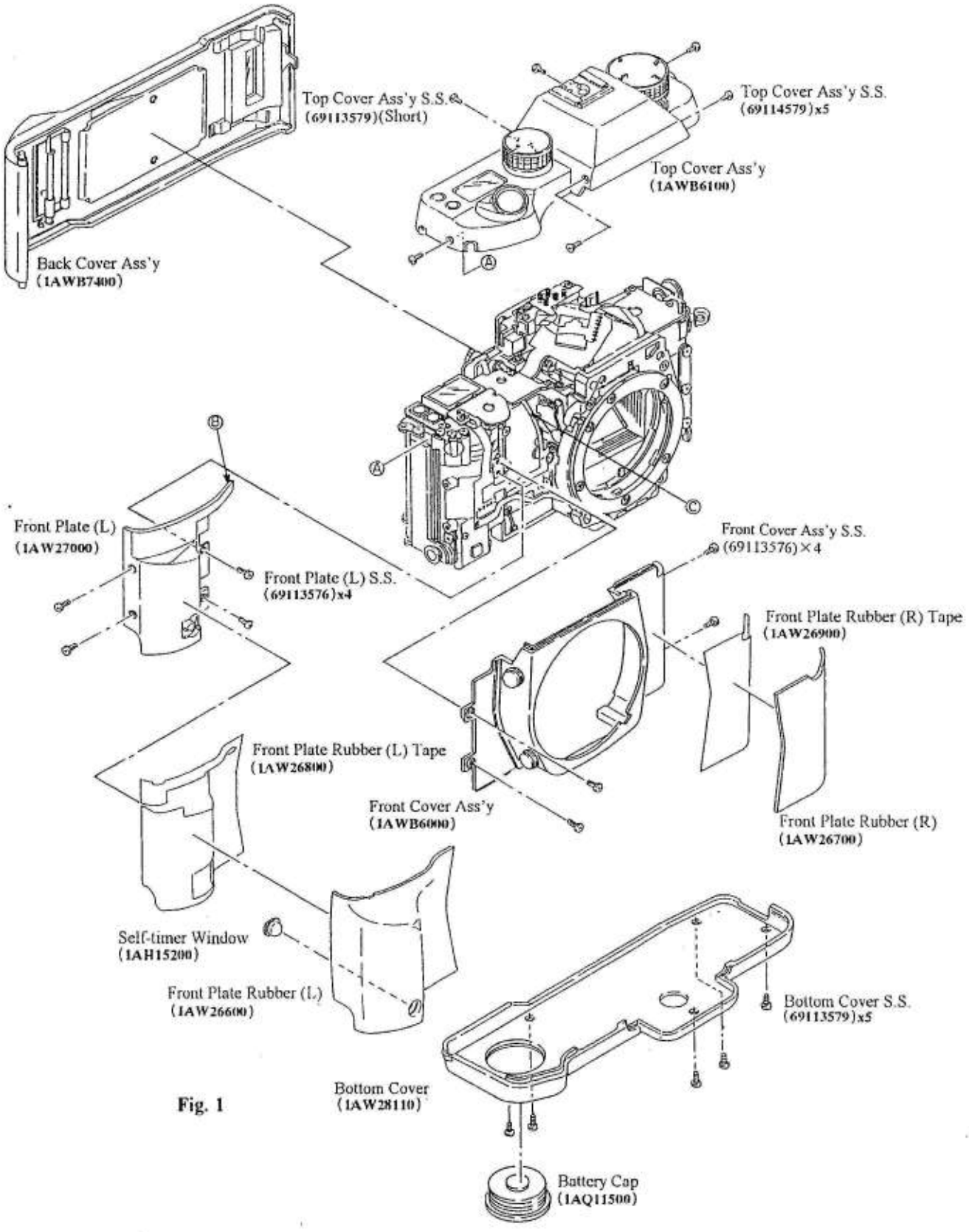

Fig. 1

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B-1-1. Removal of Back Cover Ass'y

(See Fig. 1)

1) Open the Back Cover Ass'y (1AWB7400) by pressing and sliding downward the lock button of the B. Lock Plate Base Ass'y.
2) Remove the Back Cover Ass'y while pushing down the Back Cover Release Pin.

B-1-2. Removal of Bottom Cover

(See Fig. 1)

1) Remove the Bottom Cover Setscrews (69113579) × 5 and take off the Bottom Cover (1AW28100).

B-1-3. Removal of Top Cover Ass'y

(See Fig. 1)

1) Remove the Top Cover Ass'y Setscrews (69114579) × 5, (69113579) and take off the Top Cover Ass'y (1AWB6100).
2) Unsolder the Black lead wire (from the Conduction Auxiliary Plate for the shoe) on the Main FPC. (See Fig. 2).

Notes :

- Since there is a difference in length between the Top Cover Ass'y Setscrews (69114579) × 5 (L : 4.5) and (69113579) (L : 3.5), take due care when tightening them.
- Remove the Top Cover Ass'y with the dials kept mounted on it.
- Take care not to bend or deform any of the Main SW Contact, ABC SW Contacts, Exp. Compensation Dial Contacts, Shutter Dial Contacts and Exposure Mode SW Contacts, which are incorporated in the Top Cover Ass'y.
- When the Top Cover Ass'y has been removed, take care not to bend or deform the Shoe Spring on the Main FPC Ass'y. (See Fig. 2)

B-1-4. Removal of Front Cover Ass'y

(See Fig. 1)

1) Peel off the Front Plate Rubber (R) (1AW26700).
2) Peel off the Front Plate Rubber (L) (1AW26600) and remove the Self-timer Window (1AH15200).

Notes :

- The Front Plate Rubber (R) and Front Plate Rubber (L) are fixed to the Body with the Front Plate Rubber Tape (double-stick tape).
- Once the Front Plate Rubber (R) and Front Plate Rubber (L) have been peeled off, the adhesive strength of the Front Plate Rubber Tape weakens. Be sure to replace the Front Plate Rubber Tape with new one.

3) Remove the Front Cover Ass'y Setscrews (69113576) × 4 and take off the Front Cover Ass'y (1AWB6000).
4) Remove the Front Plate (L) Setscrews (69113576) × 4 and take off the Front Plate (L) (1AWB5300), and unsolder the Red and Gray lead wires (from Self-timer LED Board) on the Main FPC. (See Fig. 2)

[Notes on Installation of Top Cover Ass'y]

(See Fig. 2)

a) Before installing the Top Cover Ass'y, wipe the patterns on the Main SW Board, Shutter Dial P.C. Board Ass'y and Exp. Compensation Dial P.C. Board Ass'y with lens cleaning paper with ether alcohol.
b) Wipe the Main SW Contact, ABC SW Contacts, Exp. Compensation Dial Contacts, Shutter Dial Contacts and Exposure Mode SW Contacts with lens cleaning paper with ether alcohol.

[How to Check Camera Operation with Top Cover Ass'y Removed]

a) To operate the camera with the Top Cover Ass'y removed, cause a short circuit by a bridge with solder on the pattern of the Main SW Board as shown in Fig. 2.
b) Before installing the Top Cover Ass'y, be sure to remove the solder.

[Notes on Installation of Front Plate (L)]

a) As shown in Fig. 2, put the left-side lead wires of the Body front to the left and dress them over the Drive IC first and then install the Front Plate (L) Ass'y (1AWB5300).
b) Install the Front Plate (L) Ass'y so that the Ⓑ portion of the Front Plate (L) Ass'y presses the Ⓒ portion of the Aperture Control FPC. (See Fig. 1) .

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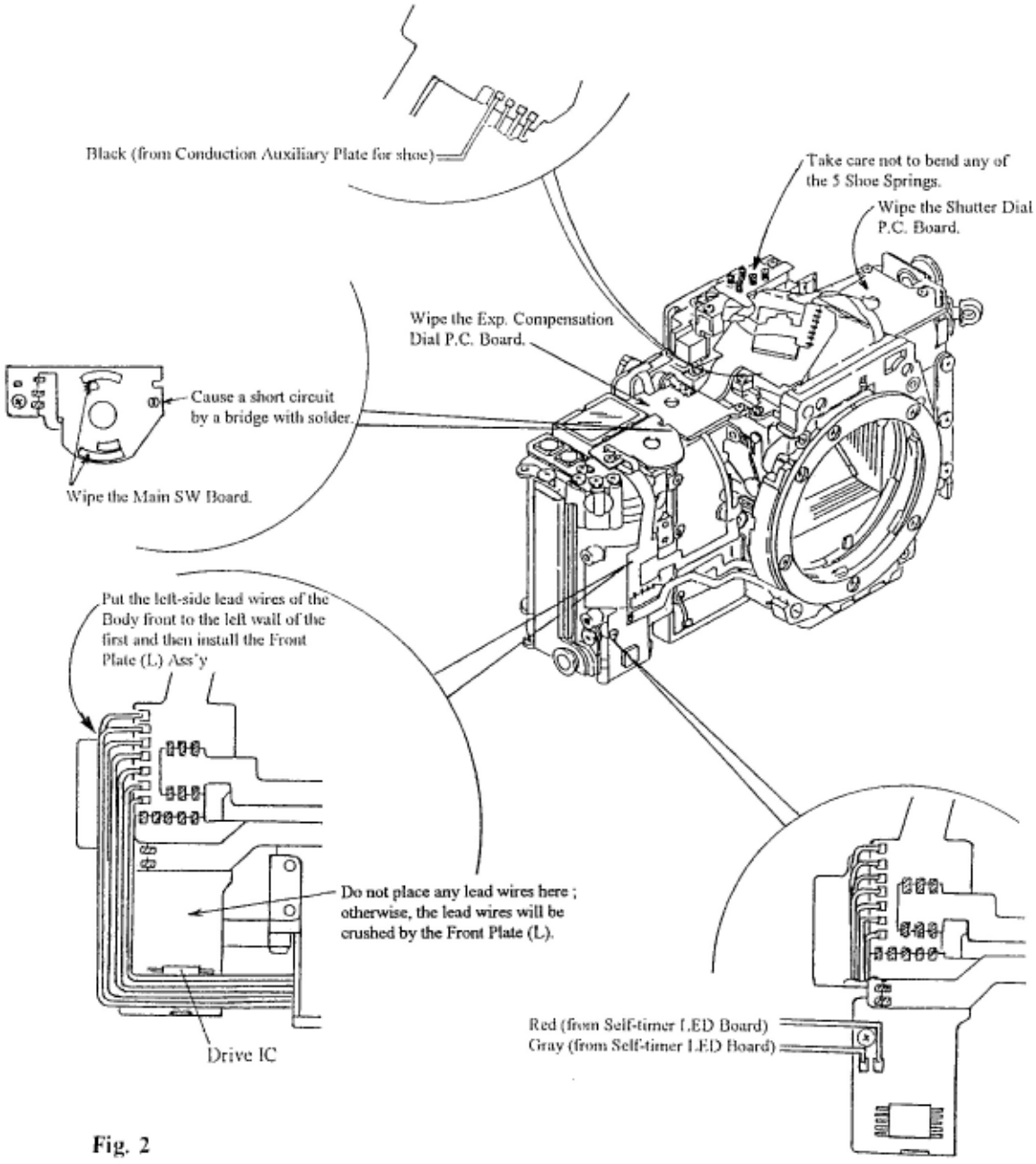
Black (from Conduction Auxiliary Plate for shoe)
Take care not to bend any of the 5 Shoe Springs.
Wipe the Shutter Dial P.C. Board.
Wipe the Exp. Compensation Dial P.C. Board.
Cause a short circuit by a bridge with solder.
Wipe the Main SW Board.
Put the left-side lead wires of the Body front to the left wall of the first and then install the Front Plate (L) Ass'y
Do not place any lead wires here ; otherwise, the lead wires will be crushed by the Front Plate (L).
Drive IC
Red (from Self-timer LED Board)
Gray (from Self-timer LED Board)

Fig. 2

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B-2. Removal of Main FPC Ass'y

[Chart for Removal of Main FPC Ass'y]

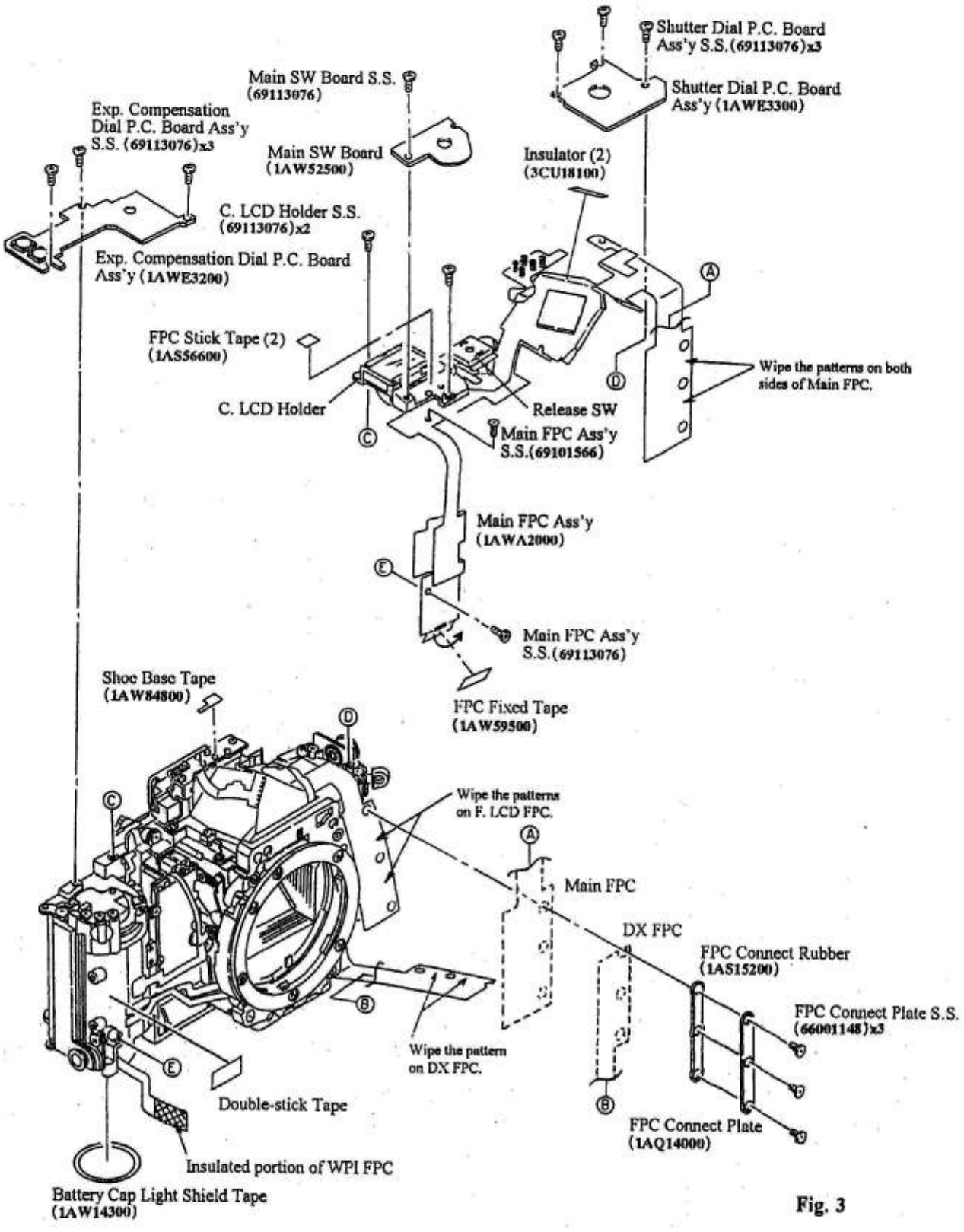
Shutter Dial P.C. Board Ass'y S.S.(69113076)x3
Shutter Dial P.C. Board Ass'y (1AWE3300)
Main SW Board S.S. (69113076)
Exp. Compensation Dial P.C. Board Ass'y S.S. (69113076)x3
Main SW Board (1AW52500)
Insulator (2) (3CU18100)
C. LCD Holder S.S. (69113076)x2
Exp. Compensation Dial P.C. Board Ass'y (1AWE3200)
FPC Stick Tape (2) (1AS56600)
Wipe the patterns on both sides of Main FPC.
C. LCD Holder
Release SW
Main FPC Ass'y S.S.(69101566)
Main FPC Ass'y (1AWA2000)
Main FPC Ass'y S.S.(69113076)
Shoe Base Tape (1AW84800)
FPC Fixed Tape (1AW59500)
Wipe the patterns on F. LCD FPC.
Main FPC
DX FPC
FPC Connect Rubber (1AS15200)
FPC Connect Plate S.S. (66001148)x3
Wipe the pattern on DX FPC.
Double-stick Tape
FPC Connect Plate (1AQ14000)
Insulated portion of WPI FPC
Battery Cap Light Shield Tape (1AW14300)

Fig. 3

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B-2-1. Removal of Main FPC Ass'y

(See Figs. 3 and 4) (Bottom Left of the Body)

1) Peel off the Battery Cap Light Shield Tape (1AW14300).
2) Raise the Main FPC in the direction of the arrow and peel off the FPC Fixed Tape (1AW59500).
3) Peel off the insulated portion of the WPI FPC.

Note :

- Take care not to break the insulated portion of the WPI FPC when peeling it off.

4) Unsolder the Red lead wire (from Battery Contact (+)) and the Black lead wire (from Conduction Auxiliary Plate for Battery Cap Holder).
5) Unsolder the White and Orange lead wires (from Winding Motor).
6) Unsolder the Black and Red lead wires (from DX FPC).
7) Unsolder the 4 soldered joints between the WPI FPC and the Main FPC.
(Front Left of the Body)
8) Unsolder the Yellow, Purple and Black lead wires (from Shutter Unit).
9) Unsolder the Blue and Pink lead wires (from M-AF Motor).
10) Unsolder the Green lead wire (from R. Socket Ass'y) and the Black lead wire (from Conduction Auxiliary Plate for R. Socket).
11) Unsolder the 6 soldered joints between the Aperture Control FPC and the Main FPC.
12) Unsolder the 5 soldered joints between the Mirror FPC and the Main FPC.
13) Unsolder the 2 soldered joints between the Preview FPC and the Main FPC.
(Top Left of the Body)
14) Unsolder the 3 soldered joints between the Main SW Board and the Main FPC.
15) Unsolder the 7 soldered joints between the Exp. Compensation Dial P.C. Board and the Main FPC.
16) Remove the Main SW Board Setscrew (69113076) and take off the Main SW Board (1AW52500).
17) Peel off the Release Switch portion of the Main FPC.

Note :

- Since the Release Switch portion of the Main FPC is fixed to the C. LCD Holder with the FPC Stick Tape (2) (1AS56600), take due care when peeling it off.

18) Remove the C. LCD Holder Setscrews (69113076) × 2 and take off the C. LCD Holder.
19) Remove the Exp. Compensation Dial P.C. Board Ass'y Setscrews (69113076) × 3 and take off the Exp. Compensation Dial P.C. Board Ass'y (1AWE3200).
20) Unsolder the 3 soldered joints between the Light Metering Mode FPC and the Main FPC.
21) Unsolder the 3 soldered joints between the WPR FPC and the Main FPC.
(Above Penta Prism)
22) Unsolder the 3 Black lead wires (from Conduction Auxiliary Plate for S. Socket, Shutter Unit and Conduction Auxiliary Plate for Battery Cap Holder).
23) Unsolder the 7 soldered joints between the Light Metering FPC and the Main FPC.
24) Peel off the Insulator (2) (3CU18100) and unsolder the 5 soldered joints between the Open F FPC and the Main FPC.
25) Unsolder the White and Pink lead wires (from Viewfinder LED).
26) Unsolder the 2 Brown lead wires (from Shutter Unit and S. Socket Ass'y).
(Top Right of the Body)
27) Unsolder the 3 soldered joints between the Shutter Dial P.C. Board and the Main FPC.
28) Remove the Shutter Dial P.C. Board Ass'y Setscrews (69113076) × 3 and take off the Shutter Dial P.C. Board Ass'y (1AWE3300).
(Front Right of the Body)
29) Unsolder Blue, Orange and Black lead wires (from AV Board).
30) Unsolder the Black lead wire (from Conduction Auxiliary Plate for Theta Board).
31) Unsolder the Gray and Yellow lead wires (from Theta Board).
32) Unsolder the 8 soldered joints between the TTL Flash Auto Control FPC and the Main FPC.
33) Remove the FPC Connect Plate Setscrews (66001148) × 3 and take off the FPC Connect Plate (1AQ14000) and FPC Connect Rubber (1AS15200).
34) Unsolder the 3 soldered joints between the Shutter FPC and the Main FPC.
35) Remove the Main FPC Ass'y Setscrews (69113076), (69101566) and take off the Main FPC Ass'y (1AWA2000).

Note :

- Since the Main FPC Ass'y is fixed with the Shoe Base Tape (1AW84800) and double-stick tape, take due care when removing it.

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[Chart for Unsoldering on Main FPC Ass'y]

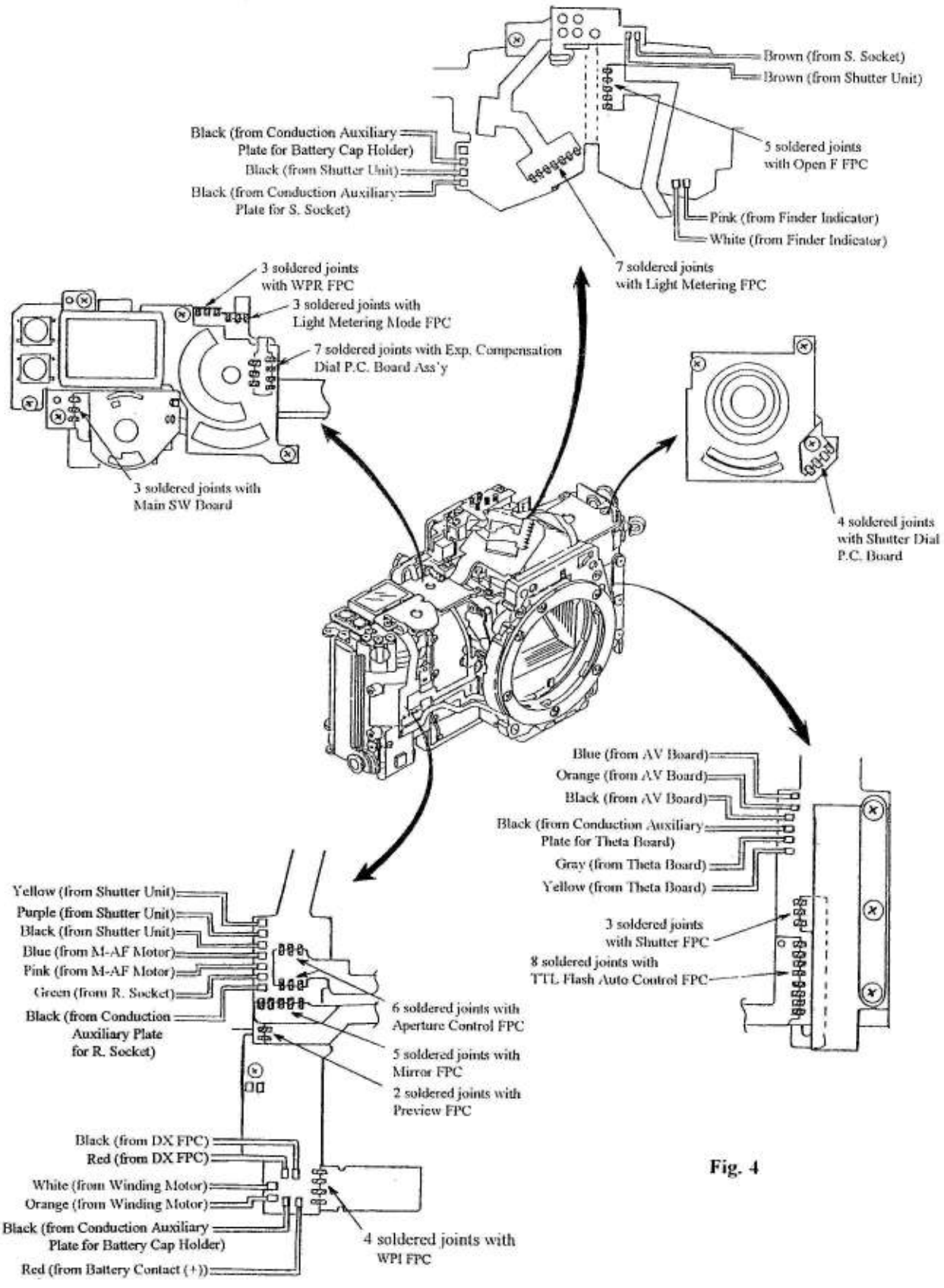
Brown (from S. Socket)
Brown (from Shutter Unit)
Black (from Conduction Auxiliary Plate for Battery Cap Holder)
Black (from Shutter Unit)
Black (from Conduction Auxiliary Plate for S. Socket)
5 soldered joints with Open F FPC
Pink (from Finder Indicator)
White (from Finder Indicator)
7 soldered joints with Light Metering FPC
3 soldered joints with WPR FPC
3 soldered joints with Light Metering Mode FPC
7 soldered joints with Exp. Compensation Dial P.C. Board Ass'y
3 soldered joints with Main SW Board
4 soldered joints with Shutter Dial P.C. Board
Blue (from AV Board)
Orange (from AV Board)
Black (from AV Board)
Black (from Conduction Auxiliary Plate for Theta Board)
Gray (from Theta Board)
Yellow (from Theta Board)
3 soldered joints with Shutter FPC
8 soldered joints with TTL Flash Auto Control FPC
Yellow (from Shutter Unit)
Purple (from Shutter Unit)
Black (from Shutter Unit)
Blue (from M-AF Motor)
Pink (from M-AF Motor)
Green (from R. Socket)
Black (from Conduction Auxiliary Plate for R. Socket)
6 soldered joints with Aperture Control FPC
5 soldered joints with Mirror FPC
2 soldered joints with Preview FPC
Black (from DX FPC)
Red (from DX FPC)
White (from Winding Motor)
Orange (from Winding Motor)
Black (from Conduction Auxiliary Plate for Battery Cap Holder)
Red (from Battery Contact (+))
4 soldered joints with WPI FPC

Fig. 4

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[Notes on Installation of Main FPC Ass'y]

a) Before installing the Main FPC Ass'y, bend the Main FPC by the following procedure to ensure easy installation and to prevent the Main FPC from being broken :

① Portion below Grip ----- If this portion is not bent once along an appropriate line beforehand so that a crease is left, it will bend along the edge of the cover lay, thus the Main FPC will become apt to break.

② Portion to be solder-jointed with Exp. Compensation Dial P.C. Board ----- This portion to be bent is relatively hard. If this portion is not bent once beforehand so that a crease is left, it is hard to install and thus the area around the bend tends to float . Be sure to bend this portion once beforehand to ensure efficient installation.

③ Accessory Shoe area----- Bend this portion when installing the Main FPC Ass'y around the Penta Prism. Bend it beforehand for easy installation.

④ Portion around Penta Prism ----- The Main FPC has been folded double in this portion to be bent and thus this portion is relatively hard. If this portion is not bent once beforehand so that a crease is left, the installed Main FPC swells and comes in contact with the ABC Click Ass'y located inside the Top Cover Ass'y.

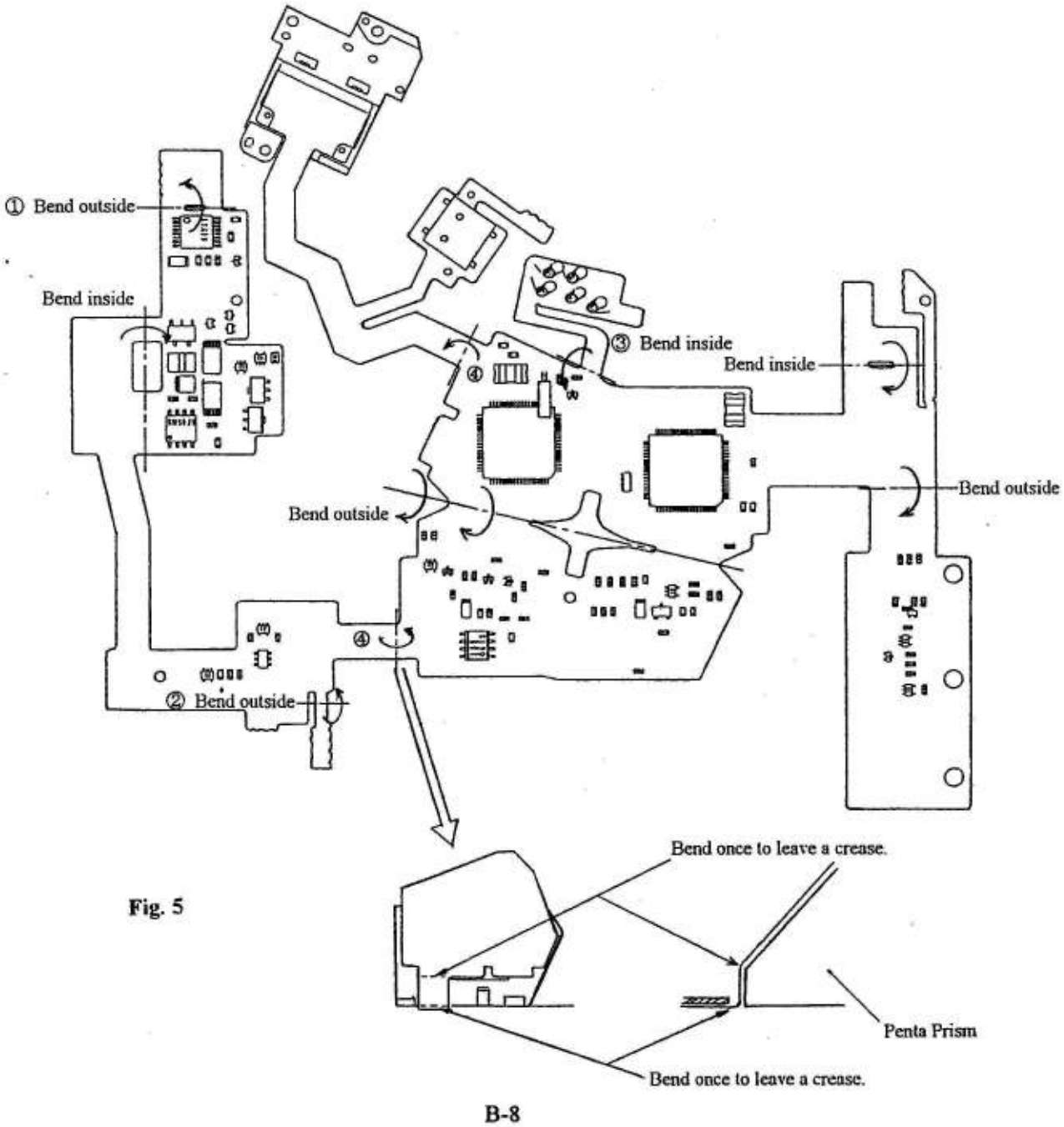

Fig. 5

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b) When installing the Shutter Dial P.C. Board Ass'y, dress the Brown lead wire (from S. Socket) and the Black lead wire (from Conduction Auxiliary Plate for S. Socket) as shown in Fig. 7.

c) When installing the Exp. Compensation Dial P.C. Board Ass'y, dress the Red lead wire (from Battery Contact (+)), Black lead wire (from Conduction Auxiliary Plate for Battery Cap Holder) and the Black and Brown lead wires (from Shutter Unit) as shown in Fig. 8.

d) Dress the front left portion of the Main FPC Ass'y as follows : (See Fig. 9)

① Stick double-stick tape on the Main FPC Ass'y and then fold the Main FPC Ass'y.
In doing so, dress the Red lead wire (from Battery Contact (+)) inside the fold of the Main FPC.

② Stick double-stick tape on the Body and affix the Main FPC Ass'y to the Body.

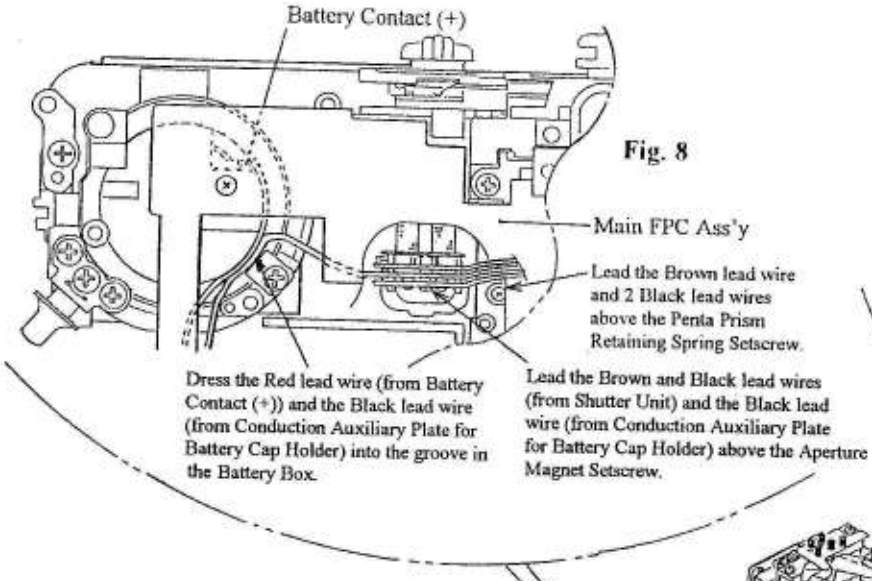
Battery Contact (+)
Main FPC Ass'y
Lead the Brown lead wire and 2 Black lead wires above the Penta Prism Retaining Spring Setscrew.
Dress the Red lead wire (from Battery Contact (+)) and the Black lead wire (from Conduction Auxiliary Plate for Battery Cap Holder) into the groove in the Battery Box.
Lead the Brown and Black lead wires (from Shutter Unit) and the Black lead wire (from Conduction Auxiliary Plate for Battery Cap Holder) above the Aperture Magnet Setscrew.

Fig. 8

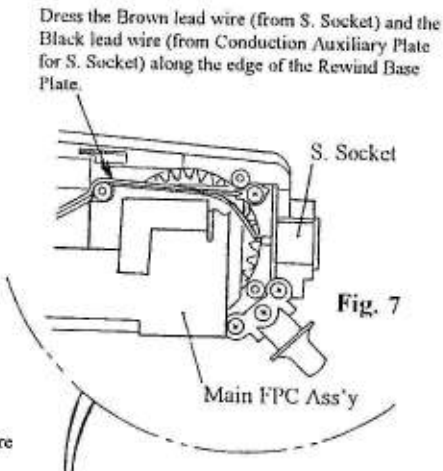
Dress the Brown lead wire (from S. Socket) and the Black lead wire (from Conduction Auxiliary Plate for S. Socket) along the edge of the Rewind Base Plate.
S. Socket
Main FPC Ass'y

Fig. 7

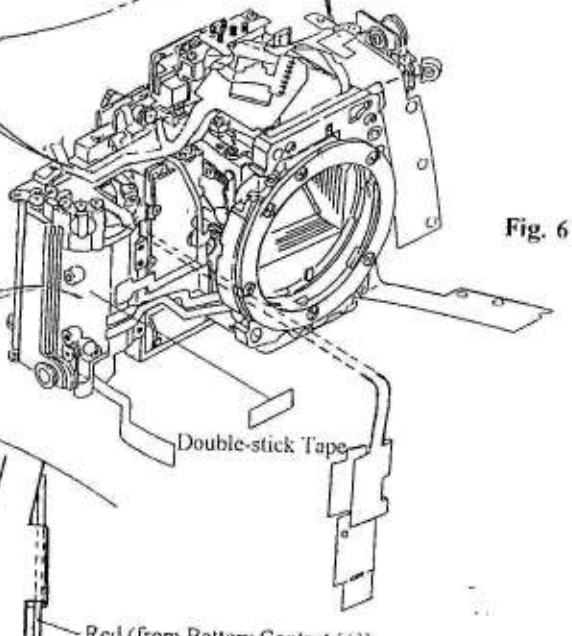

Fig. 6

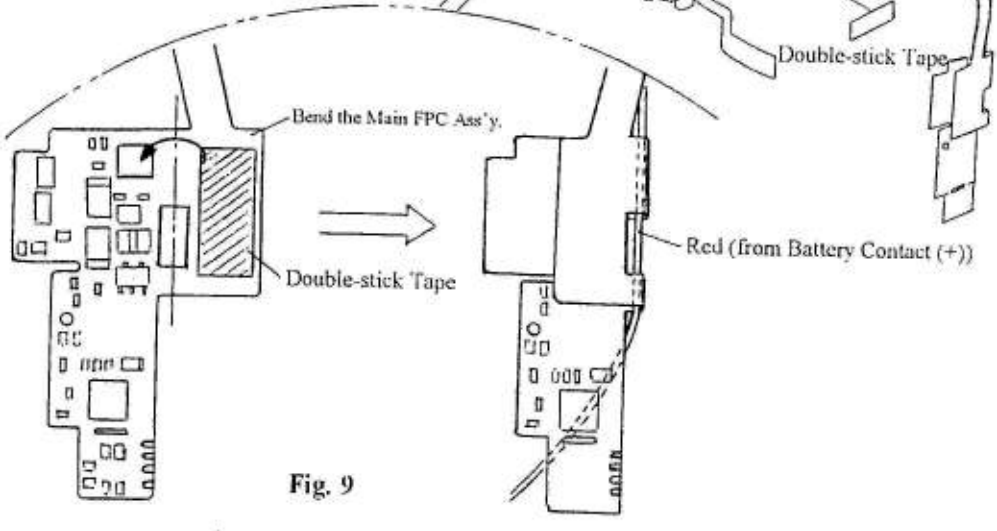

Fig. 9

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e) With lens cleaning paper with ether alcohol, wipe the connector patterns on both sides of the Main FPC Ass'y, the connector pattern on the F. LCD FPC and the connector pattern on the DX FPC. (See Fig. 3).
f) Dress the Main FPC Ass'y around the shoe as shown in Fig. 10.
g) Dress the lower portion of the Main FPC Ass'y as follows : (See Fig. 11)
   ① Fold the insulated portion of the WPI FPC.
   ② Stick the FPC Fixed Tape (1AW59500).
   ③ Fold the FPC Fixed Tape.
   ④ Bend the Main FPC Ass'y and dress it between the Body and the Battery Cap Holder.
h) Stick the Insulator (2) (3CU18100) on the portion of the soldered joint between the Main FPC Ass'y and the Open F FPC. (See Fig. 12)

Fig.10

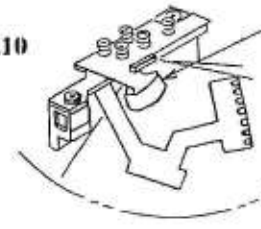
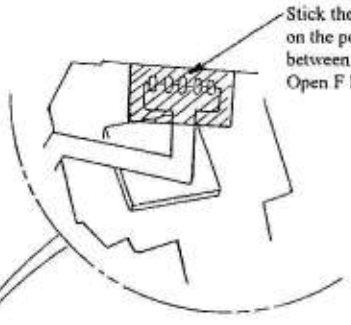


Fig.12



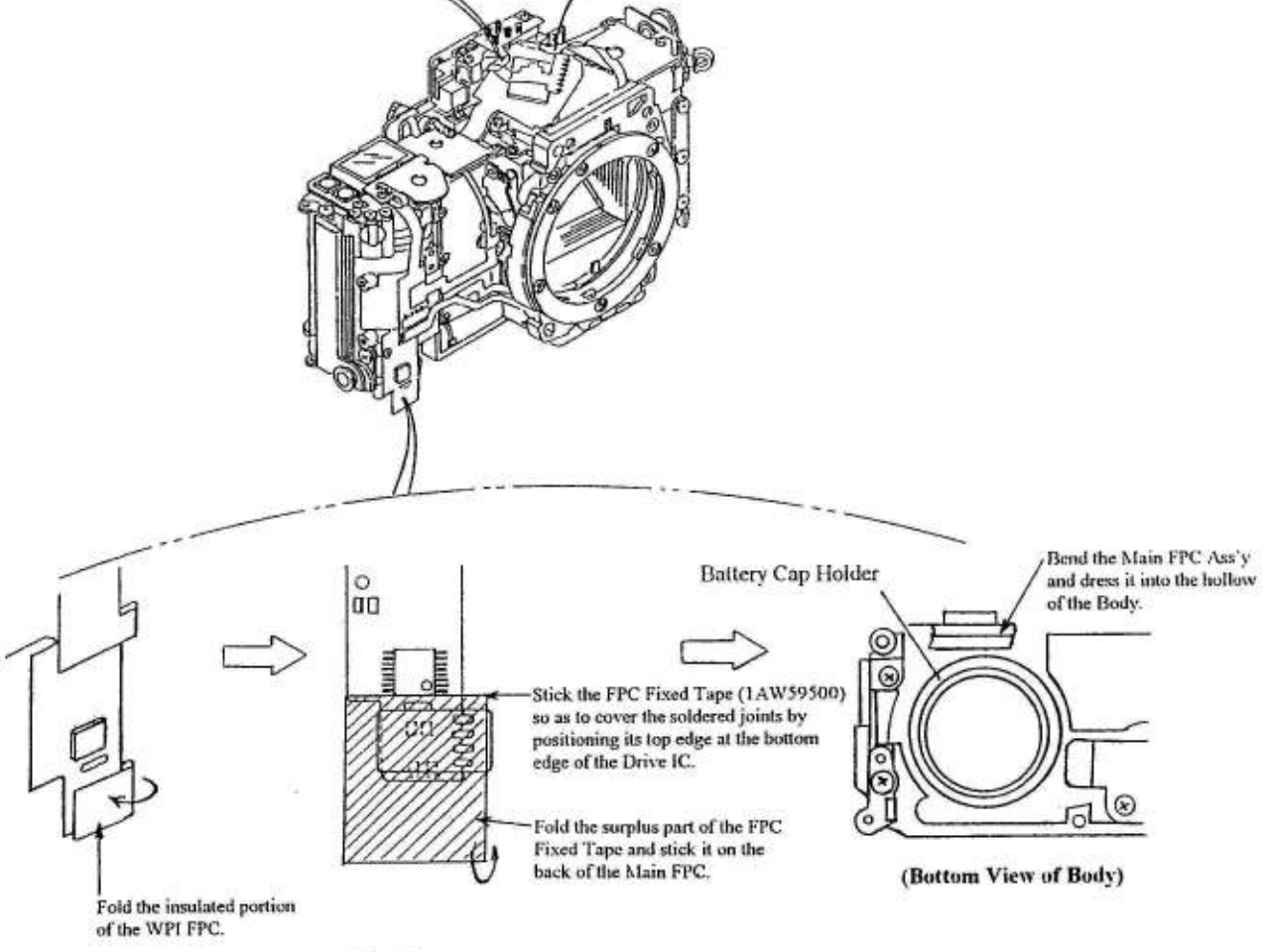

Battery Cap Holder
Bend the Main FPC Ass'y and dress it into the hollow of the Body.
Stick the FPC Fixed Tape (1AW59500) so as to cover the soldered joints by positioning its top edge at the bottom edge of the Drive IC.
Fold the surplus part of the FPC Fixed Tape and stick it on the back of the Main FPC.
Fold the insulated portion of the WPI FPC.
(Bottom View of Body)

Fig.11

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B-3. REMOVAL OF MIRROR BOX ASS'Y & SHUTTER UNIT

B-3-1. Removal of Mirror Box Ass'y

(See Fig. 13)

1) Remove the Eye-piece Frame Setscrews (69123579) × 2 and take off the Eye-piece Frame (1AW25800).
2) Remove the Mirror Box Ass'y Setscrews (69313576) × 3, (69113576) × 2, (69228066) × 2, (69225066), (69 226066) and take off the Mirror Box Ass'y.

B-3-2. Removal of Shutter Unit

(See Fig. 13)

1) Remove the Shutter Unit Setscrews (66001126) × 3 and take off the Shutter Unit (1AW35000).

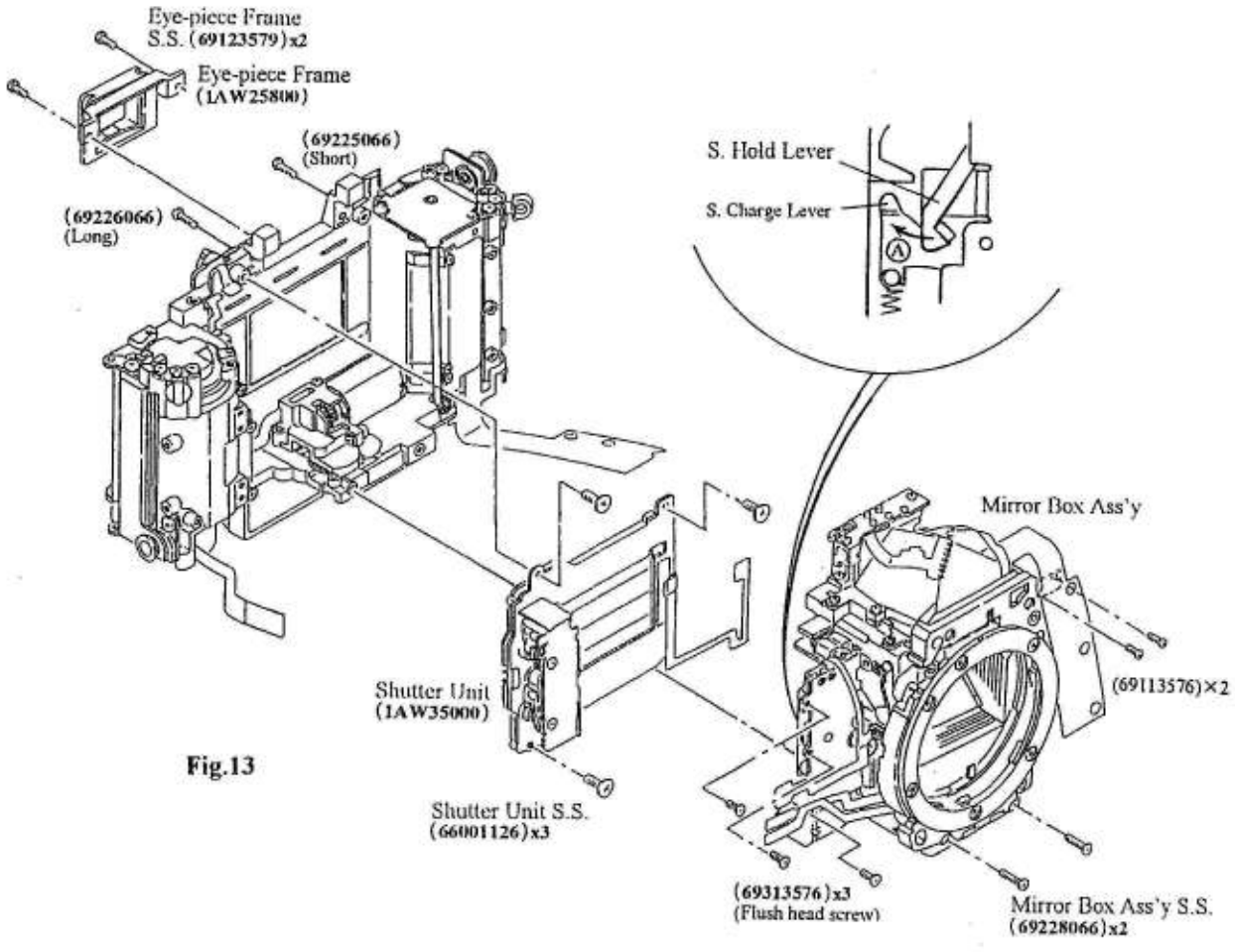

Fig.13

[Notes on Installation of Mirror Box Ass'y]

a) By moving the S. Hold Lever incorporated in the Mirror Box Ass'y in the direction of the arrow Ⓐ, rotate the rotor of the S. Charge Motor to release the hook of the S. Hold Lever and the hook of the S. Charge Lever. In this state, where the mirror is in the UP position, install the Mirror Box Ass'y in the Body. (See Fig. 13)
b) When installing the Mirror Box Ass'y in the Body, take care not to catch any lead wires or FPC between the Body and the Mirror Box Ass'y.

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[Notes on Handling of Shutter Unit]

a) The blades of the Shutter Unit are made with precision. Never touch the blades with your finger nor push them with any tool.
b) Never clean the blades of the Shutter Unit with any solvent (such as, ether alcohol).
c) Do not hold the lower part Ⓐ of the Shutter Unit with your fingers. (See Fig. 14)

[How to Fasten the Shutter FPC Ass'y]

a) As shown in Fig. 14, stick the Shutter P.R. Fixed Tape (1AW35200) on the Shutter FPC Ass'y (1AWE1100). In doing so, stick the Shutter P.R. Fixed Tape in such a way that its lower stepped portion is bent perpendicularly.
b) Insert the Shutter P.R. Retainer (1AW35100) into the Shutter Unit.

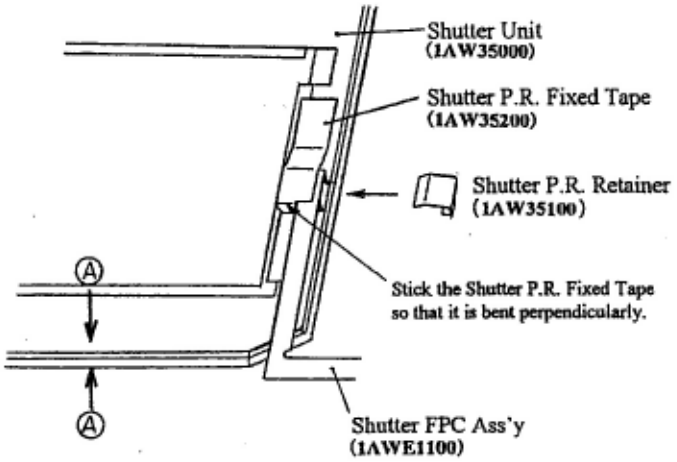

Fig.14

[Dressing of Shutter FPC Ass'y]

a) After tightening the Shutter Unit Setscrews, insert and dress the Ⓐ portion of the Shutter FPC Ass'y under the DX Holding Plate to prevent the Shutter FPC from coming in contact with the Rewind Gear (3) Plate (1AW32600).

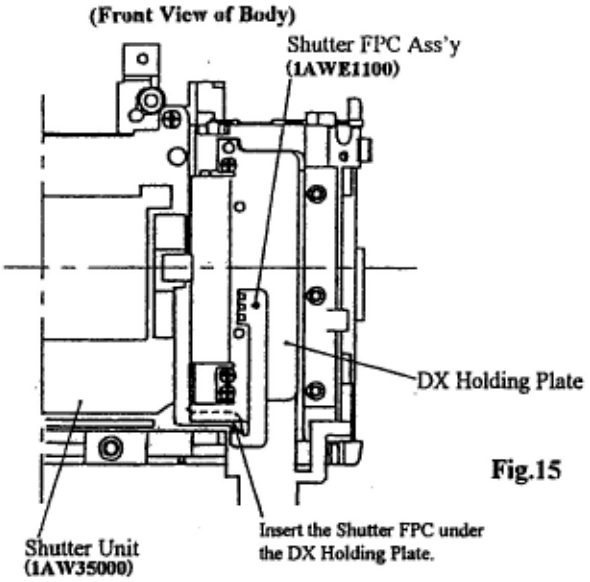

Fig.15

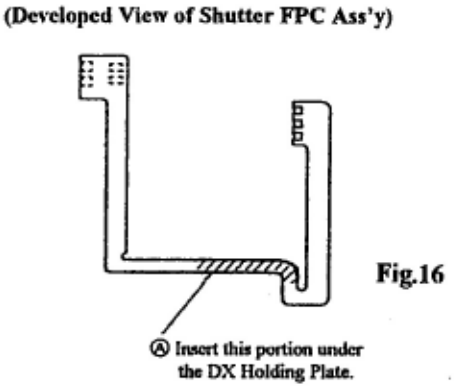

Fig.16

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B-4. DISASSEMBLY OF WINDING & REWIND MECHANISM

[Chart for Disassembly of Winding & Rewind Mechanism]

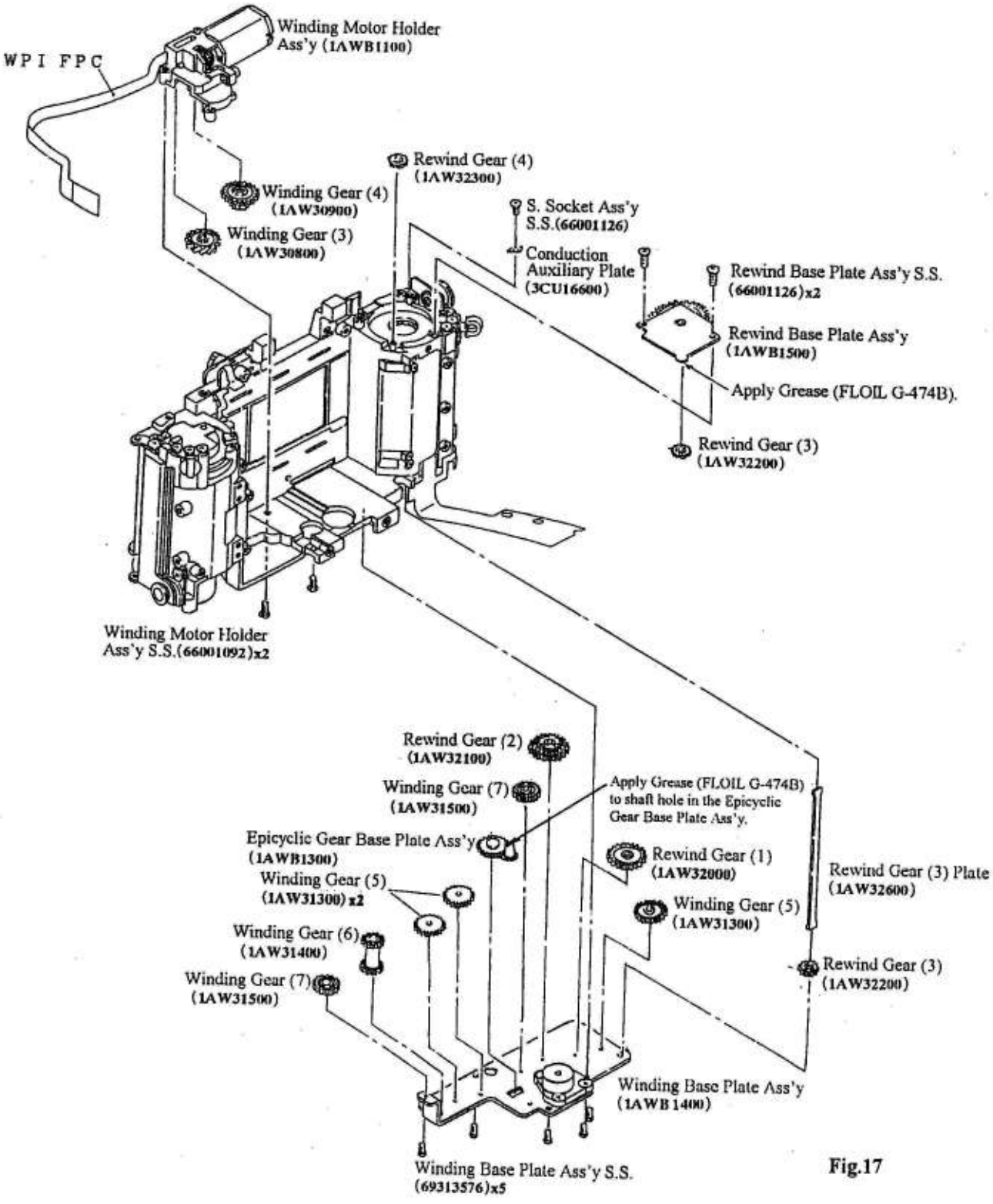
Winding Motor Holder Ass'y (1AWB1100)
WPI FPC
Rewind Gear (4) (1AW32300)
Winding Gear (4) (1AW30900)
Winding Gear (3) (1AW30800)
S. Socket Ass'y S.S.(66001126)
Conduction Auxiliary Plate (3CU16600)
Rewind Base Plate Ass'y S.S. (66001126)x2
Rewind Base Plate Ass'y (1AWB1500)
Apply Grease (FLOIL G-474B).
Rewind Gear (3) (1AW32200)
Winding Motor Holder Ass'y S.S.(66001092)x2
Rewind Gear (2) (1AW32100)
Winding Gear (7) (1AW31500)
Apply Grease (FLOIL G-474B) to shaft hole in the Epicyclic Gear Base Plate Ass'y.
Epicyclic Gear Base Plate Ass'y (1AWB1300)
Rewind Gear (1) (1AW32000)
Rewind Gear (3) Plate (1AW32600)
Winding Gear (5) (1AW31300) x2
Winding Gear (5) (1AW31300)
Winding Gear (6) (1AW31400)
Rewind Gear (3) (1AW32200)
Winding Gear (7) (1AW31500)
Winding Base Plate Ass'y (1AWB1400)
Winding Base Plate Ass'y S.S. (69313576)x5

Fig.17

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B-4-1. Removal of Rewind Base Plate Ass'y

(Top Right of the Body) (See Fig. 17)

1) Remove the S. Socket Ass'y Setscrew (66001226) and take off the Conduction Auxiliary Plate (3CU16600).
2) Remove the Rewind Base Plate Ass'y Setscrews (66001126) × 2 and take off the Rewind Base Plate Ass'y (1AWB1500).
3) Remove the Rewind Gear (4) (1AW32300), Rewind Gear (3) (1AW32200) and Rewind Gear (3) Plate (1AW32600).

B-4-2. Removal of Winding Base Plate Ass'y

(Bottom of the Body) (See Fig. 17)

1) Remove the Winding Base Plate Ass'y Setscrews (69313576) × 5 and take off the Winding Base Plate Ass'y (1AWB1400).
2) Remove the Winding Gear (3) (1AW32200), Winding Gear (5) (1AW31300), Winding Gear (2) (1AW32110) and Winding Gear (7) (1AW31500).
3) Remove the Epicyclic Gear Base Plate Ass'y (1AWB1300), Winding Gears (5) (1AW31300) × 2, Winding Gear (6) (1AW31400) and Winding Gear (7) (1AW31500).

B-4-3. Removal of Winding Motor Holder Ass'y

(See Fig. 17)

1) Remove the Winding Motor Holder Ass'y Setscrews (66001092) × 2 and take off the Winding Gear (4) (1AW30900), Winding Gear (3) (1AW30800) and Winding Motor Holder Ass'y (1AWB1100).

[Notes on Installation of Winding & Rewind Gears]

a) When installing the Winding Gear (5) (1AW31300) (3 gears) and the Winding Gear (7) (1AW31500) (2 gears), take care not to mistake the top and bottom by paying attention to the distinction between the top and bottom as shown below :

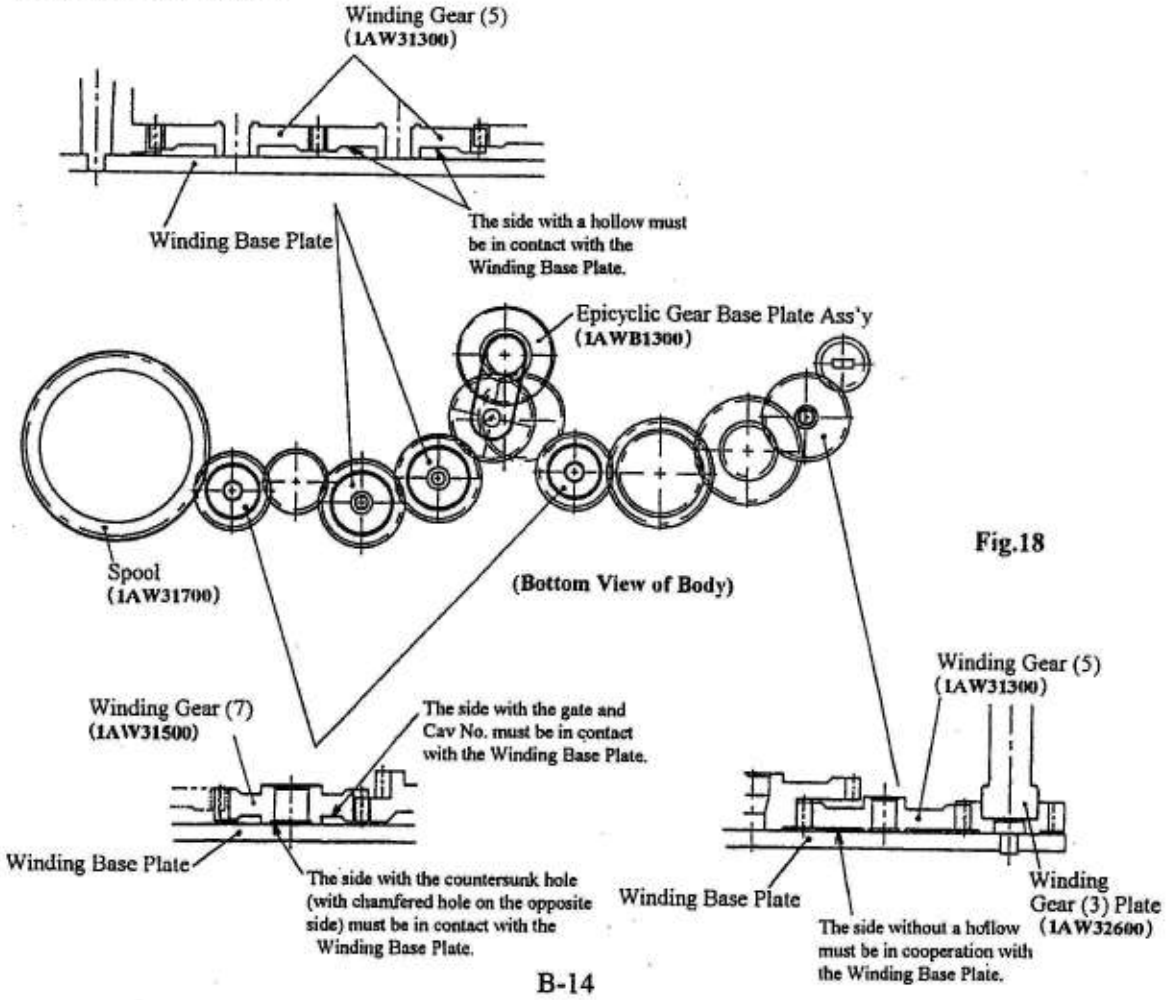
Winding Gear (5)
(1AW31300)
Winding Base Plate
The side with a hollow must be in contact with the Winding Base Plate.
Epicyclic Gear Base Plate Ass'y
(1AWB1300)
Spool
(1AW31700)
(Bottom View of Body)
Winding Gear (7)
(1AW31500)
The side with the gate and Cav No. must be in contact with the Winding Base Plate.
Winding Base Plate
The side with the countersunk hole (with chamfered hole on the opposite side) must be in contact with the Winding Base Plate.
Winding Gear (5)
(1AW31300)
Winding Base Plate
Winding Gear (3) Plate
(1AW32600)
The side without a hollow must be in cooperation with the Winding Base Plate.

Fig.18

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[Dressing of Lead Wires of Winding Motor Holder Ass'y]

a) Dress the White and Orange lead wires of the Winding Motor Holder Ass'y between the pins and the Body wall by putting one lead wire on the other and fasten them by applying the bond (Cemedine 551).
b) Dress the WPI FPC over the lead wires.

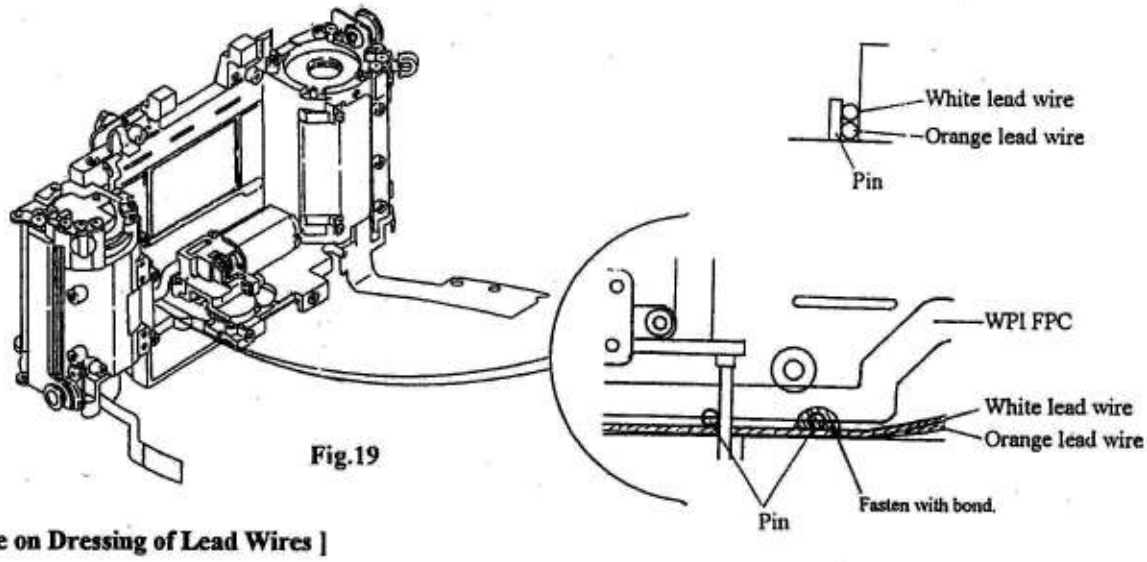

Fig.19

[Note on Dressing of Lead Wires]

a) Dress the Black and Red lead wires coming from the DX FPC as shown in Fig. 20 first and then install the Winding Base Plate Ass'y (1AWB1400).

[Greasing]

a) As shown in Fig. 20, apply the Grease (FLOIL G-474) to each gear shaft on the Body.
b) Apply the Grease (FLOIL G-474) to the gear shafts on the Winding Motor Holder Ass'y. (See Fig. 21)

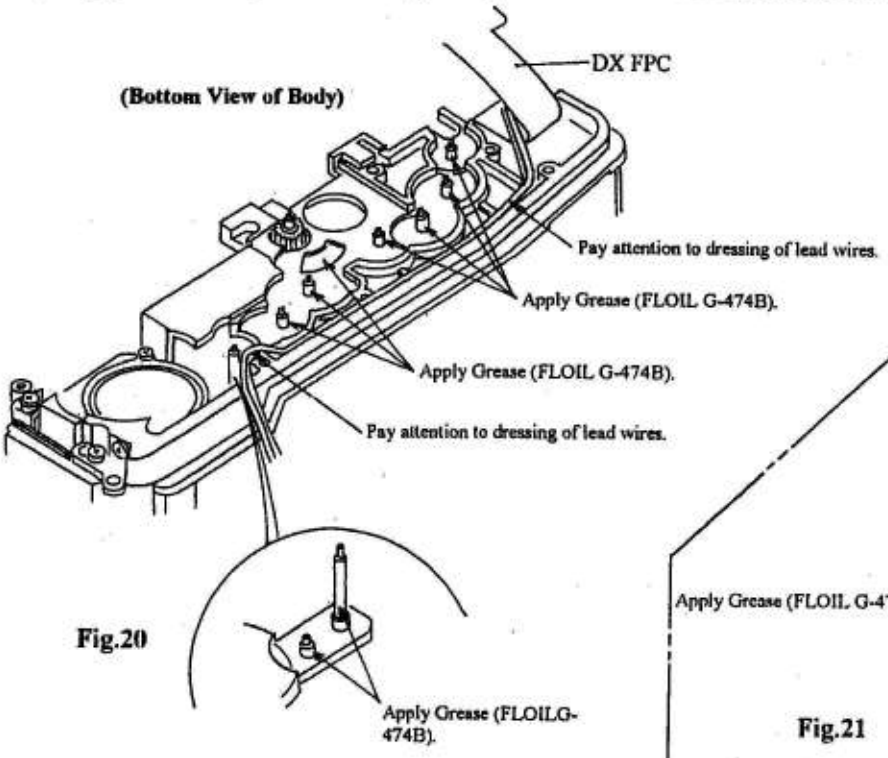
(Bottom View of Body)
DX FPC
Pay attention to dressing of lead wires.
Apply Grease (FLOIL G-474B).
Apply Grease (FLOIL G-474B).
Pay attention to dressing of lead wires.
Apply Grease (FLOILG-474B).

Fig.20

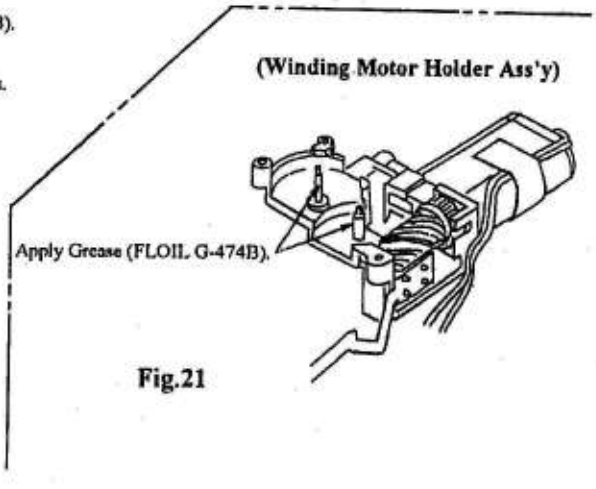

Fig.21

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B-5. REMOVAL OF OTHER PARTS

[Chart for Removal of Other Parts]

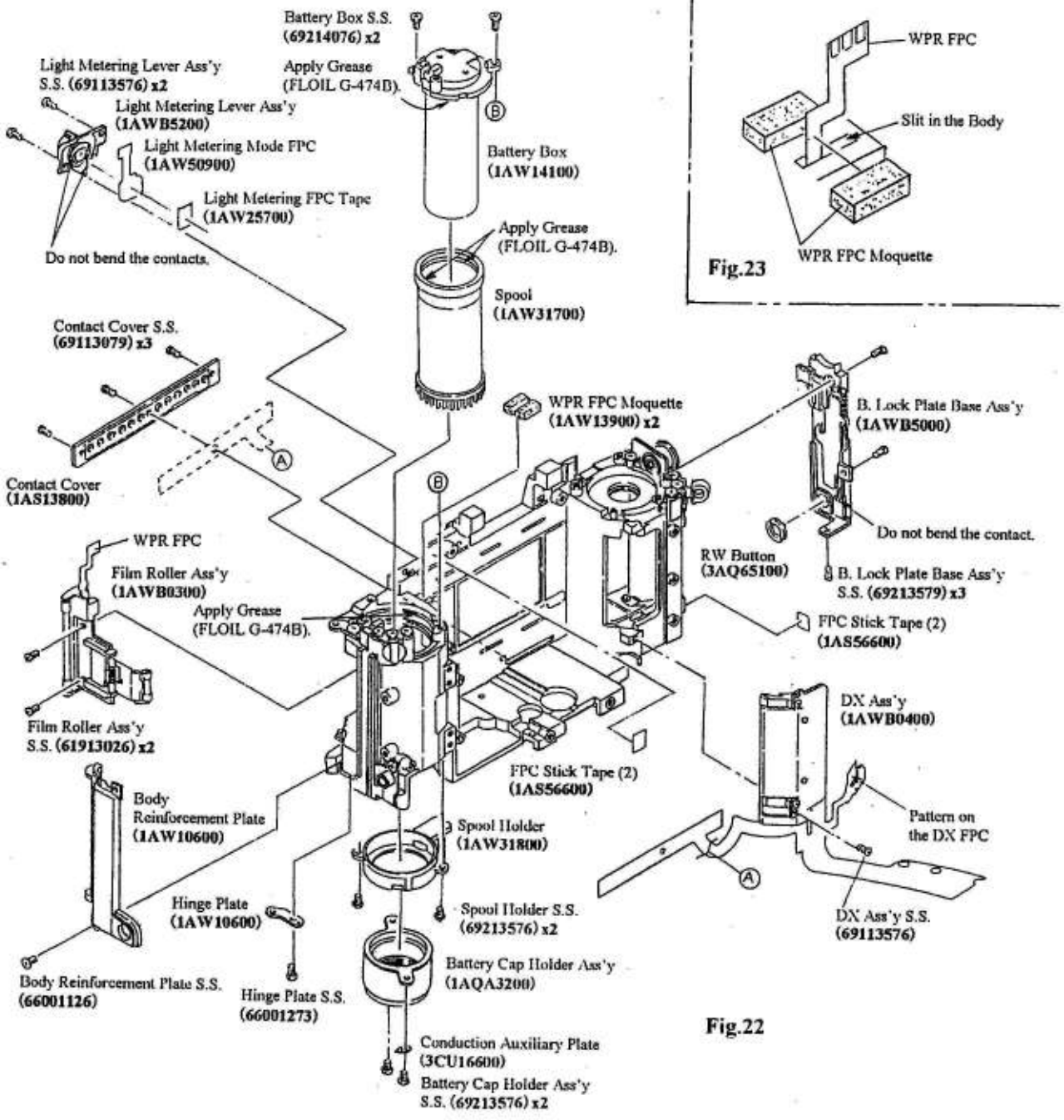
Battery Box S.S. (69214076) x2
Light Metering Lever Ass'y S.S. (69113576) x2
Apply Grease (FLOIL G-474B).
Light Metering Lever Ass'y (1AWB5200)
Light Metering Mode FPC (1AW50900)
Light Metering FPC Tape (1AW25700)
Do not bend the contacts.
Battery Box (1AW14100)
Apply Grease (FLOIL G-474B).
Spool (1AW31700)
Contact Cover S.S. (69113079) x3
Contact Cover (1AS13800)
WPR FPC Moquette (1AW13900) x2
B. Lock Plate Base Ass'y (1AWB5000)
Do not bend the contact.
RW Button (3AQ65100)
B. Lock Plate Base Ass'y S.S. (69213579) x3
FPC Stick Tape (2) (1AS56600)
WPR FPC
Film Roller Ass'y (1AWB0300)
Apply Grease (FLOIL G-474B).
Film Roller Ass'y S.S. (61913026) x2
DX Ass'y (1AWB0400)
FPC Stick Tape (2) (1AS56600)
Body Reinforcement Plate (1AW10600)
Spool Holder (1AW31800)
Pattern on the DX FPC
Hinge Plate (1AW10600)
Spool Holder S.S. (69213576) x2
DX Ass'y S.S. (69113576)
Battery Cap Holder Ass'y (1AQA3200)
Body Reinforcement Plate S.S. (66001126)
Hinge Plate S.S. (66001273)
Conduction Auxiliary Plate (3CU16600)
Battery Cap Holder Ass'y S.S. (69213576) x2

Fig.22

Fig.23

B-5-1. Removal of Battery Box

(See Fig. 22)

1) Remove the Battery Cap Holder Ass'y Setscrews (69213576) × 2 and take off the Conduction Auxiliary Plate (3CU16600) and Battery Cap Holder Ass'y (1AQA3200).
2) Remove the Battery Box Ass'y Setscrews (69214076) × 2 and take off the Spool (1AW31700) and Battery Box (1AW14100).
3) Remove the Spool Holder Setscrews (69213576) × 2 and take off the Spool Holder (1AW31800).

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B-5-2. Removal of Film Roller Ass'y

(See Fig. 22)

1) Remove the Hinge Plate Setscrew (66001273) at the bottom of the Body and take off the Hinge Plate (1AW10600).
2) Remove the Base Reinforcement Plate Setscrew (66001126) and take off the Base Reinforcement Plate (1AW10500).
3) Peel off the WPR FPC Moquette (1AW13900) × 2.
4) Remove the Film Roller Ass'y Setscrews (61913026) × 2 and take off the Film Roller Ass'y (1AWB0300).

B-5-3. Removal of DX Ass'y

(See Fig. 22)

1) Remove the B. Lock Plate Base Ass'y Setscrews (69213579) × 3 and take off the B. Lock Plate Base Ass'y (1AWB5000) and RW Button (3AQ65100).
2) Remove the Contact Cover Setscrews (69113079) × 3 and take off the Contact Cover (1AS13800).
3) Remove the DX Ass'y Setscrew (69113576) and take off the DX Ass'y (1AWB0400).

Notes :

- When the B. Lock Plate Base Ass'y has been removed, take care not to bend or deform the B. Lock Plate Base Contact.
- The pattern portion of the DX FPC of the DX Ass'y is fixed to the Body with the FPC Stick Tape (2) (1AS56600).
- Before installing the B. Lock Plate Base Ass'y, wipe the B. Lock Plate Base Contact and the pattern on the DX FPC with lens cleaning paper with ether alcohol.

B-5-4. Removal of the Light Metering Lever Ass'y

(See Fig. 22)

1) Remove the Light Metering Lever Ass'y Setscrews (69113576) × 2 and take off the Light Metering Lever Ass'y (1AWB5200).
2) Peel off the Light Metering Mode FPC (1AW50900).

Notes :

- When the Light Metering Lever Ass'y has been removed, take care not to bend or deform the Light Metering Lever Contact.
- The Light Metering Mode FPC (1AW50900) is fixed to the Body with the Light Metering FPC Tape (1AW25700) and FPC Stick Tape (2) (1AS56600). Usually, there is no need of removing the Light Metering Mode FPC.
- Before installing the Light Metering Lever Ass'y, wipe the Light Metering Lever Contact and the pattern on the Light Metering Mode FPC with lens cleaning paper with ether alcohol.

[Notes on Sticking of WPR FPC Moquette]

a) Stick the WPR FPC Moquette (1AW13900) × 2 so that they are in close contact with the top surface of the slit area of the Body and the WPR FPC. (See Fig. 23)

[How to Fasten Light Metering Mode FPC]

(See Figs. 24 and 25)

1) Stick the Light Metering FPC Tape (1AW25700) on the back surface of the Body.
2) Stick the Light Metering Mode FPC by fitting it on the bosses on the Body.
3) Fix the Light Metering Mode FPC only to the right-side boss by applying the bond (Cemedine 551).
4) Stick the FPC Stick Tape (2) (1AS56600) on the front surface of the Body.
5) Stick the Light Metering Mode FPC by bending it so that its end is in alignment with the end of the Shutter Unit.

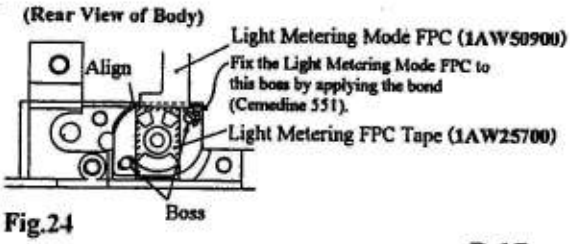
(Rear View of Body)
Light Metering Mode FPC (1AW50900)
Align
Fix the Light Metering Mode FPC to this boss by applying the bond (Cemedine 551).
Light Metering FPC Tape (1AW25700)
Boss

Fig.24

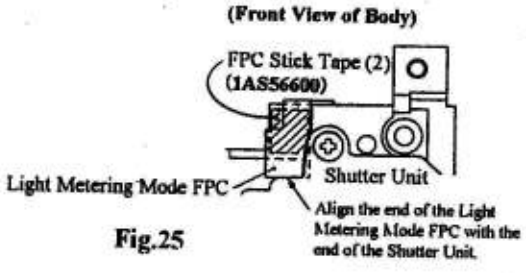
(Front View of Body)
FPC Stick Tape (2) (1AS56600)
Shutter Unit
Light Metering Mode FPC
Align the end of the Light Metering Mode FPC with the end of the Shutter Unit.

Fig.25

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B-6. DISASSEMBLY & ASSEMBLY PROCEDURES FOR ASS'Y PARTS

B-6-1. Disassembly of Mirror Box Ass'y

(See Fig. 26)

1) Remove the Eye-piece Ass'y Setscrews (69113576) × 2 and take off the Eye-piece Ass'y (1AWF2300).
2) Remove the Finder Indicator Cover Ass'y Setscrews (69203076) × 2 and take off the Finder Indicator Cover Ass'y (1AWF2200).
3) Remove the Penta Prism Holder Setscrews (69114576) × 4 and take off the Penta Prism Holder W/ Penta Prism.
4) Remove the 4 or 8 Focus Adjust Washers.

Notes :

- The Focus Adjust Washers to be installed must be the exact washers that have been removed. If faulty viewfinder focusing occurs, adjust viewfinder focusing by replacing these Focus Adjust Washers.
- Once the Finder Indicator Cover Ass'y (1AWF2200) has been removed, make the Adjustment of Viewfinder Indication Positions. (See page C-4)
- Take care not to flaw the LCD surface of the Finder Indicator Cover Ass'y.

[Note on Tightening of Penta Prism Holder Setscrews]

a) Tighten the Penta Prism Holder Setscrews (69114576) × 4 in the order of ①, ②, ③ and ④. (See Fig. 26)

[Note on Reassembly of Finder Indicator Cover Ass'y]

a) Lead the Pink and White lead wires of the Finder Indicator Cover Ass'y under the hook of the Penta Prism Holder. (See Fig. 27)

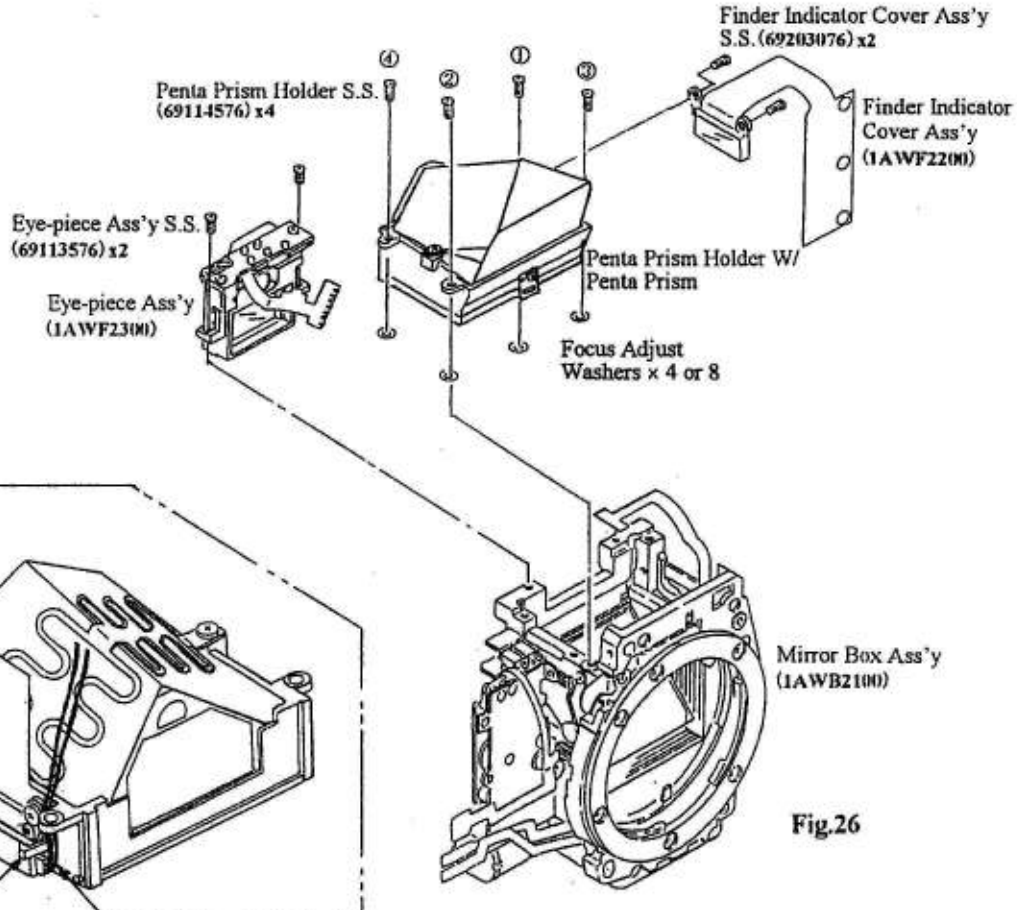

Fig.26

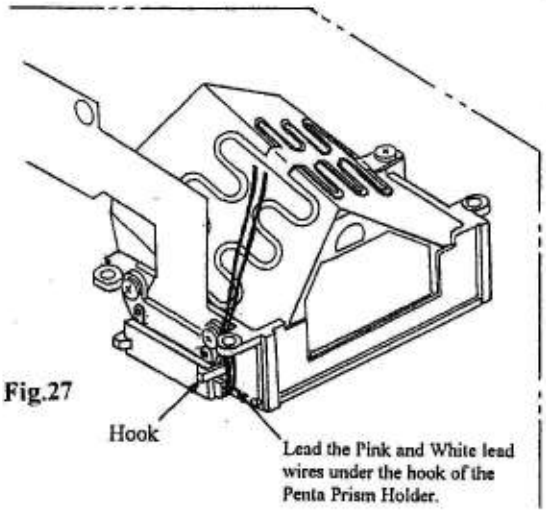

Fig.27

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(See Fig. 28)

5) Remove the FC Unit Ass'y Setscrews (69113576), (61912026) × 3 and take off the FC Gear (1) (1AW64500) and FC Unit Ass'y (1AWB4000).
6) Remove the Open F. Stop Signal Base Plate Ass'y Setscrews (69103576) × 2 and take off the Open F. Stop Signal Base Plate Ass'y (1AWB3700).

Note :

- Once the Open F. Stop Signal Base Plate Ass'y (1AWB3700) has been removed, make the Open F. Stop Contact Position Adjustment. (See page C-2)

7) Remove the MS Base Plate Ass'y Setscrews (69113576) × 4 and take off the MS Base Plate Ass'y (1AWB3100).
8) Remove the S. Release Lever Spring (1AW72400), Mirror Up Lever Spring (1AG71700) and S. Charge Lever Spring (1AM72700).
9) Remove the M. Cam Gear (1AWB3000), S. Cam Gear (1AW75500), MS Gear (4) (1AM75100), Mirror Gear (3) (1AM1300) and Mirror Gear (2) (1AM71200).
10) Remove the Mirror Down Spring (1AG71800), Mirror Up Lever (1AW76300) and S. Charge Lever (1AW7 6000).
11) Remove the Aperture Lever Spring (1AW73300), Aperture Lever Spring Cover (1AW76900) and Aperture Lever Ass'y (1AWB2900).
12) Remove the TTL Flash Auto IC Holder Ass'y Setscrews (69113576) × 2 and take off the TTL Flash Auto IC Holder Ass'y (1AWB2700).

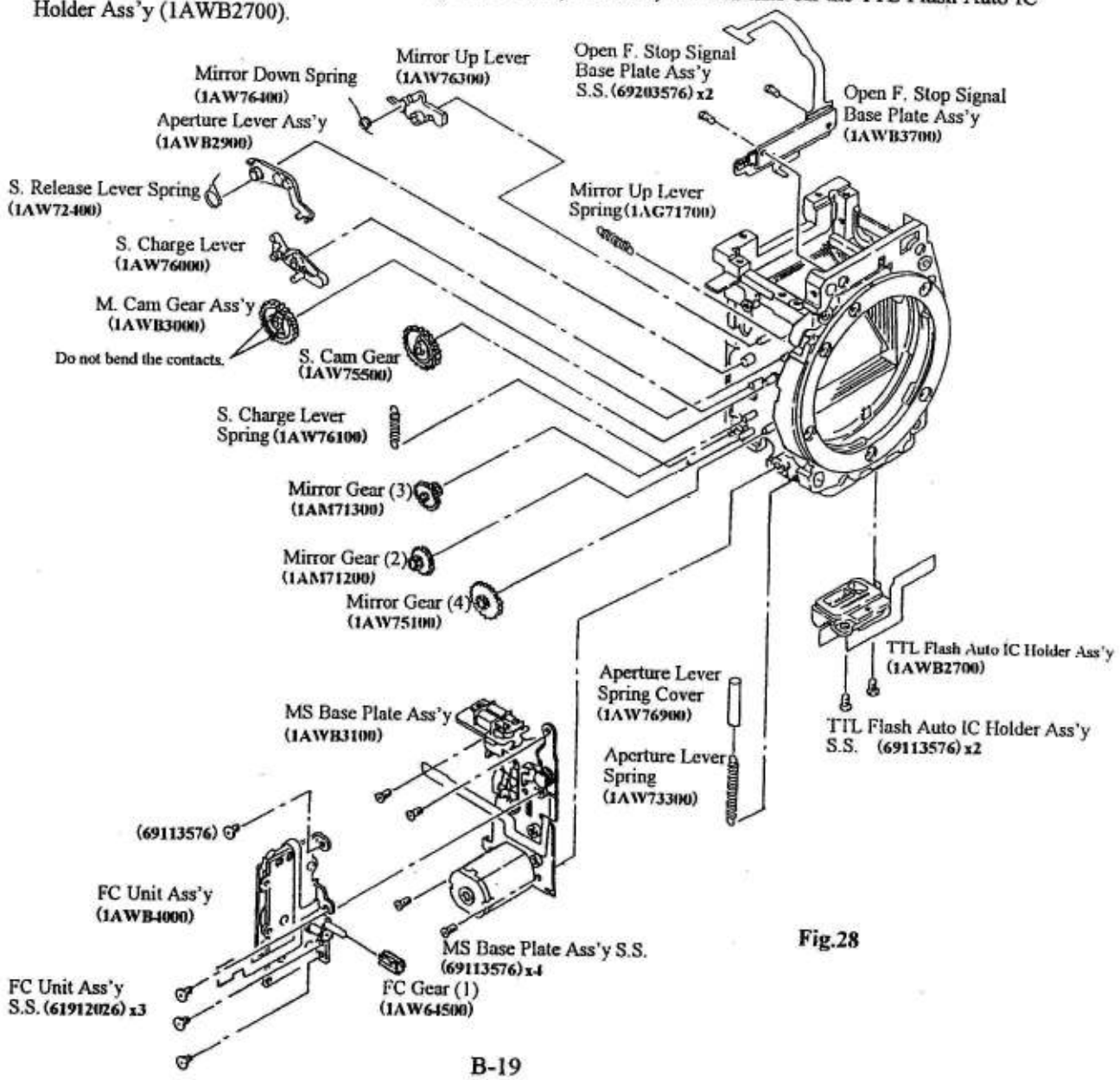
Mirror Down Spring (1AW76400)
Mirror Up Lever (1AW76300)
Open F. Stop Signal Base Plate Ass'y S.S. (69203576) x2
Open F. Stop Signal Base Plate Ass'y (1AWB3700)
Aperture Lever Ass'y (1AWB2900)
S. Release Lever Spring (1AW72400)
Mirror Up Lever Spring (1AG71700)
S. Charge Lever (1AW76000)
M. Cam Gear Ass'y (1AWB3000)
Do not bend the contacts.
S. Cam Gear (1AW75500)
S. Charge Lever Spring (1AW76100)
Mirror Gear (3) (1AM71300)
Mirror Gear (2) (1AM71200)
Mirror Gear (4) (1AW75100)
TTL Flash Auto IC Holder Ass'y (1AWB2700)
Aperture Lever Spring Cover (1AW76900)
TTL Flash Auto IC Holder Ass'y S.S. (69113576) x2
MS Base Plate Ass'y (1AWB3100)
Aperture Lever Spring (1AW73300)
(69113576)
FC Unit Ass'y (1AWB4000)
MS Base Plate Ass'y S.S. (69113576) x4
FC Unit Ass'y S.S. (61912026) x3
FC Gear (1) (1AW64500)

Fig.28

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(See Fig. 29)

13) Remove the Body Mount Setscrews (66001254), (69125062) × 5 and take off the Body Mount (1AW70700) and Mount Spring (1AW70500).
14) Remove the Mount Stopper Setscrews (69113576) × 2 and take off the Mount Stopper (13981300).
15) Remove the Preview Switch Setscrew (69113076) and take off the Mount Lug Plate (1AW70800) and Preview Switch (1AA92900).
16) Peel off the Preview FPC (1AW50800).

Note :

- The Preview FPC is fixed with the FPC Stick Tape (2) (1AS56600).

17) Remove the Lens Lock Lever Setscrew (66001268) and take off the Lens Lock Lever (1AW71500) and Lens Lock Lever Spring (1AA78500).
18) Remove the Theta Base Plate Ass'y Setscrew (69113572) and take off the Conduction Auxiliary Plate (3CU16600) and Theta Base Plate Ass'y (1AWB2400).
19) Remove the AV Gear (L) Retainer Ass'y Setscrews (69113576) × 3 and take off the AV Gear (L) Retainer Ass'y (1AWB2300).
20) Remove the AV Spring (17476400).
21) Remove the Aperture Ring Holding Plate Ass'y Setscrews (69103576) × 4, (69113076) × 4 and take off the Aperture Ring Holding Plate Ass'y (1AWB2500).
22) Remove the AV Gear (L) Ass'y (1AWB2200).
23) Remove the AV Board Ass'y Setscrews (69112566) × 2 and AV Board Ass'y (1AWE2600).

Note :

- Once the AV Gear (L) Ass'y (1AWB2200) has been removed, make the Adjustment of AV Gear (L) Ass'y Position (Aperture Value). (See page C-3)

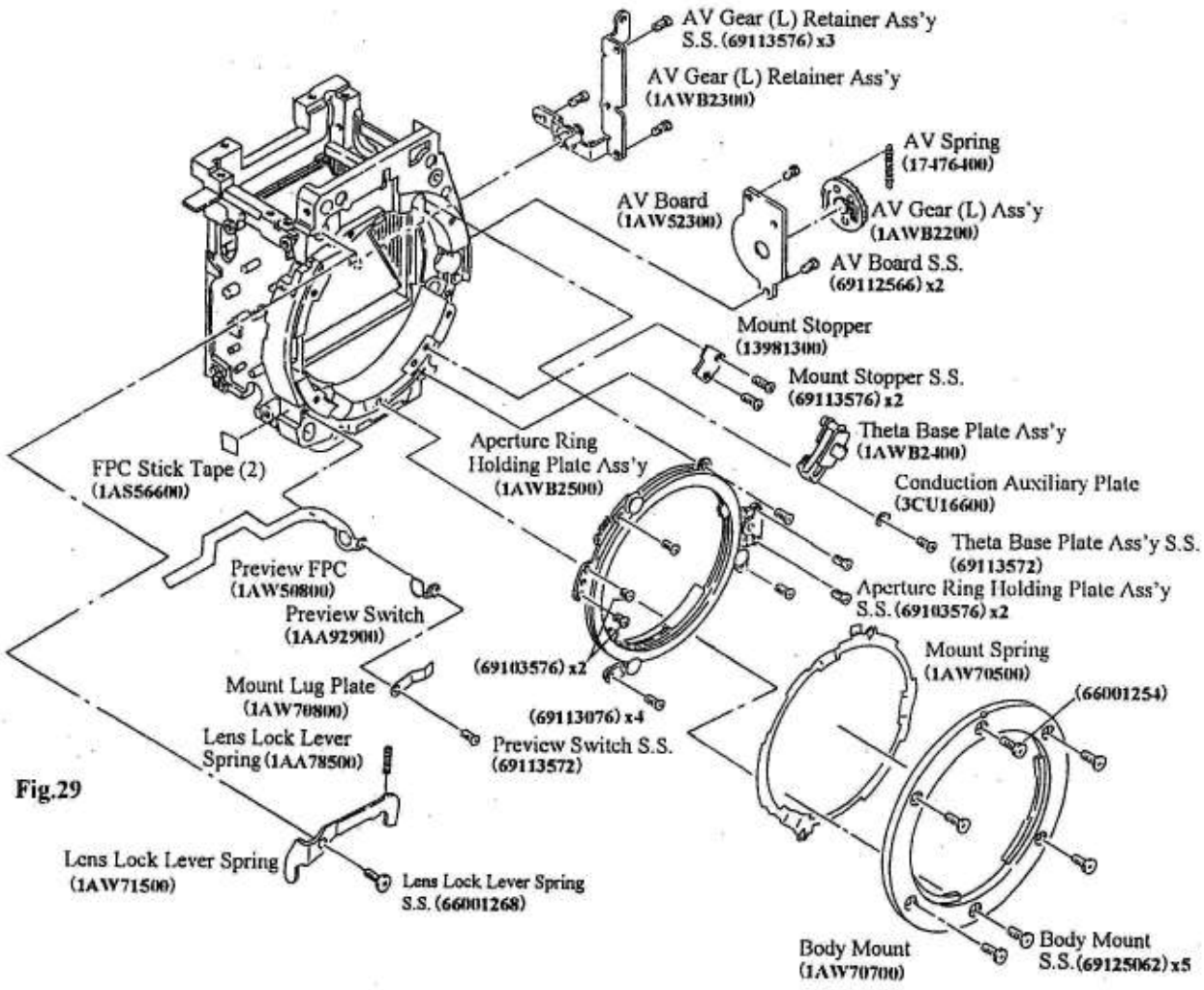
AV Gear (L) Retainer Ass'y S.S. (69113576) x3
AV Gear (L) Retainer Ass'y (1AWB2300)
AV Spring (17476400)
AV Board (1AW52300)
AV Gear (L) Ass'y (1AWB2200)
AV Board S.S. (69112566) x2
Mount Stopper (13981300)
Mount Stopper S.S. (69113576) x2
Theta Base Plate Ass'y (1AWB2400)
Conduction Auxiliary Plate (3CU16600)
Theta Base Plate Ass'y S.S. (69113572)
Aperture Ring Holding Plate Ass'y S.S. (69103576) x2
Aperture Ring Holding Plate Ass'y (1AWB2500)
FPC Stick Tape (2) (1AS56600)
Preview FPC (1AW50800)
Preview Switch (1AA92900)
Mount Lug Plate (1AW70800)
(69103576) x2
(69113076) x4
Preview Switch S.S. (69113572)
Mount Spring (1AW70500)
(66001254)
Lens Lock Lever Spring (1AA78500)
Lens Lock Lever Spring (1AW71500)
Lens Lock Lever Spring S.S. (66001268)
Body Mount (1AW70700)
Body Mount S.S. (69125062) x5

Fig.29

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[Notes on Reassembly of Mirror Box]

a) As shown in Fig. 30, apply the Grease (FLOIL G-474B) to each gear shaft and sliding surface at the left side of the Mirror Box.

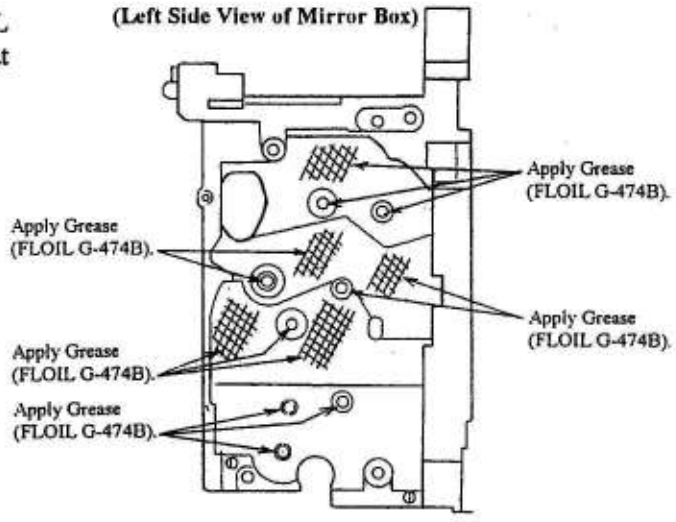
(Left Side View of Mirror Box)
Apply Grease (FLOIL G-474B).
Apply Grease (FLOIL G-474B).
Apply Grease (FLOIL G-474B).
Apply Grease (FLOIL G-474B).
Apply Grease (FLOIL G-474B).

Fig.30

b) Tighten the Aperture Ring Holding Plate Ass'y Setscrews (69113076) × 4, (69103576) × 4 in the order as shown in Fig. 31.

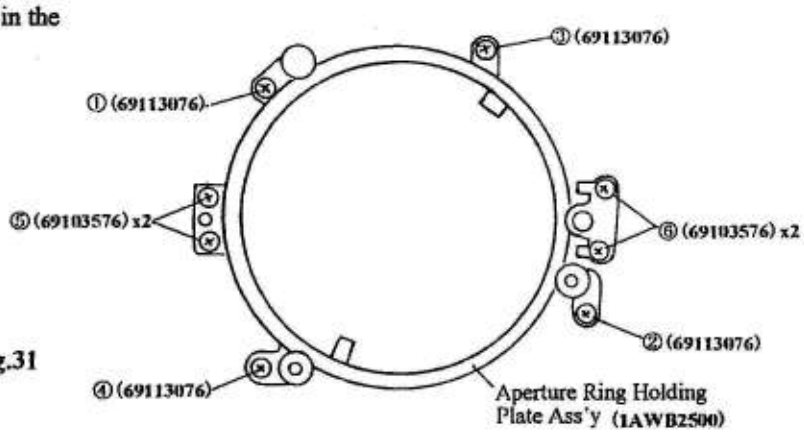

Fig.31

c) Apply the Grease (FLOIL G-474B) to the S. Charge Lever (1AW76000), Mirror Up Lever (1AW76300) and Mirror Down Spring (1AW76400) as shown in Fig. 32.

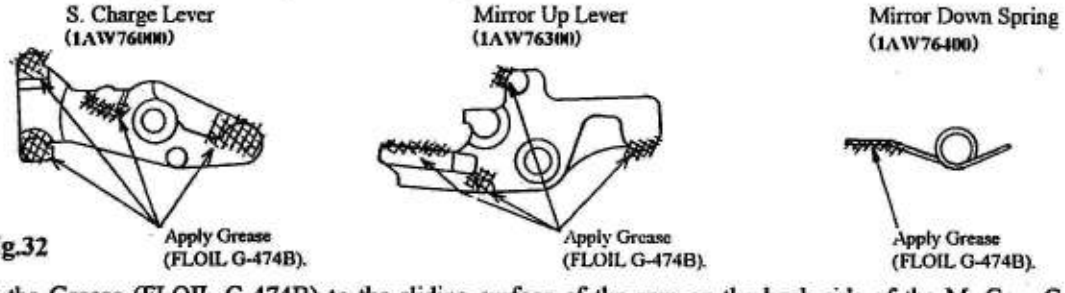
S. Charge Lever (1AW76000)
Mirror Up Lever (1AW76300)
Mirror Down Spring (1AW76400)
Apply Grease (FLOIL G-474B).
Apply Grease (FLOIL G-474B).
Apply Grease (FLOIL G-474B).

Fig.32

d) Apply the Grease (FLOIL G-474B) to the sliding surface of the cam on the back side of the M. Cam Gear Ass'y (1AWB3000) and the sliding surfaces of the cams on the front and back sides of the S. Cam Gear (1AW75500).

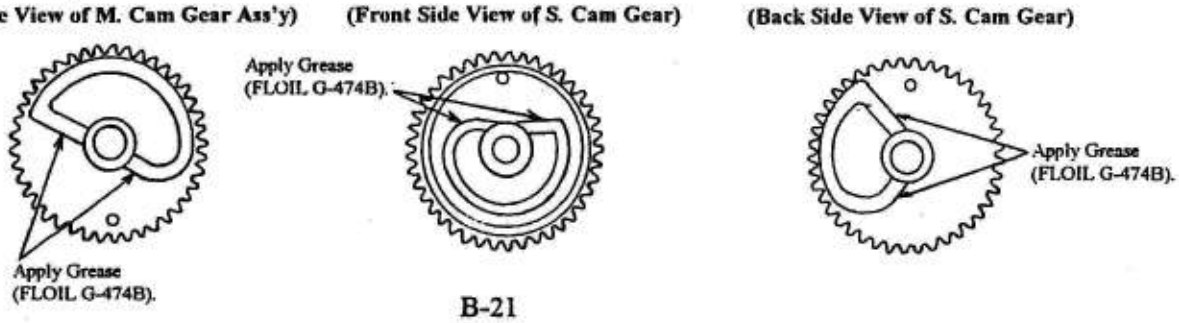
(Back Side View of M. Cam Gear Ass'y)
(Front Side View of S. Cam Gear)
(Back Side View of S. Cam Gear)
Apply Grease (FLOIL G-474B).
Apply Grease (FLOIL G-474B).
Apply Grease (FLOIL G-474B).

Fig.33

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e) Set the Mirror Down Spring (1AW76400) on the pin of the Mirror Frame.
f) Set the S. Release Lever Spring (1AW72400) in a way as shown in Fig. 34.
g) Install the Aperture Lever Ass'y (1AWB2900) in such a way that its end is positioned above the pin of the Aperture Ring Holding Plate Ass'y.
h) Wipe the contacts of the M. Cam Gear Ass'y (1AWB3000) with lens cleaning paper with ether alcohol.
i) Install the M. Cam Gear Ass'y (1AWB3000) and S. Cam Gear (1AW75500) so that their holes prepared as marks are in alignment with each other.
j) Set the S. Charge Lever Spring (1AW76100) in an orientation as shown in Fig. 34.

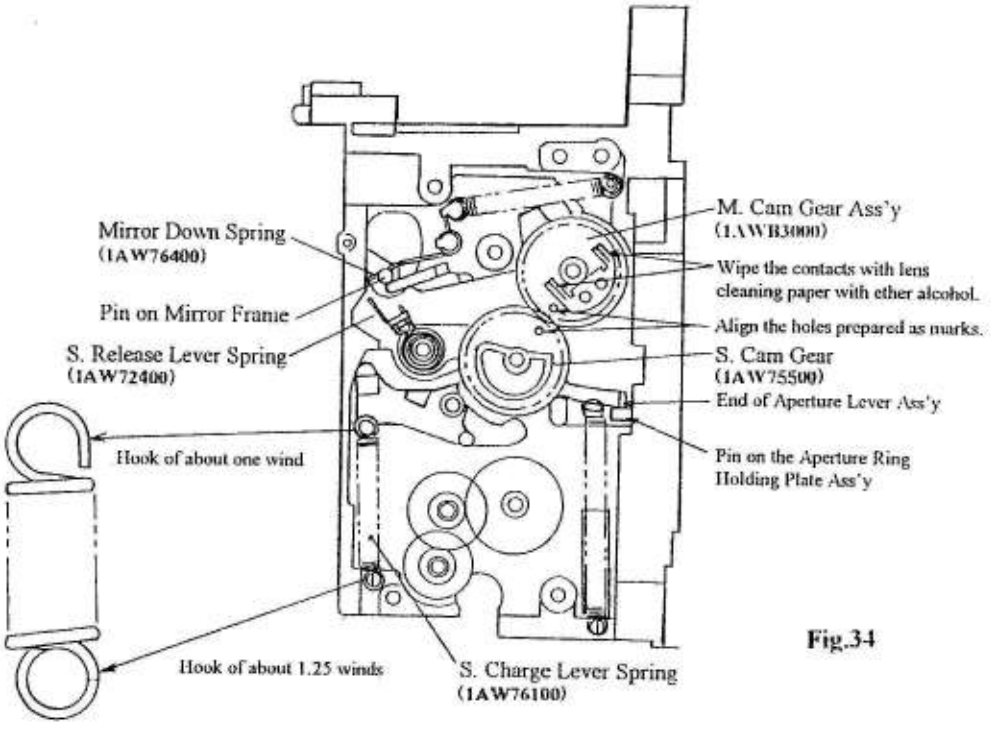

Fig.34

[Notes on Installation of MS Base Plate Ass'y]

a) Turn the Aperture Ring in the aperture stop-down direction (in the direction of the arrow) and with it kept in this position, install the MS Base Plate Ass'y (1AWB3100) in the Mirror Box.
In doing so, the S. Release Lever Spring (1AW72400) must be in the position as shown in Fig. 35.
b) Apply a small amount of the Grease (FLOIL G-474B) to part of the S. Release Lever that is engaged with the S. Release Lever Spring.

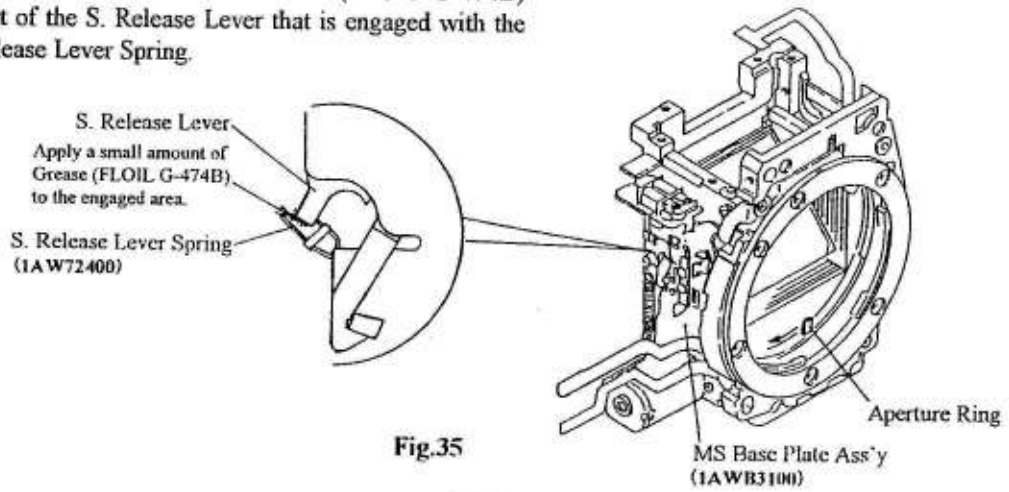

Fig.35

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[Reassembly Procedure for FC Unit Ass'y]

(See Fig. 36)

1) Apply the Oil (DRYSURE A1007) to the shaft of the FC Unit Ass'y.
2) Install the FC Gear (1) (1AW64500) on the shaft of the FC Unit Ass'y.
3) Move the FC Lever in the direction of the arrow Ⓐ.
4) Turn the FC Gear (1) clockwise by about one turn.
   After that, release the FC Gear (1) and make certain that the FC Gear (1) turns smoothly.
5) From the position where the FC Gear (1) is standing still, turn the FC Gear (1) clockwise by about one turn.
   In this state, move the FC Lever in the direction of the arrow Ⓑ and lock the FC Slit Plate.
6) Turn the Aperture Ring of the Aperture Ring Holding Plate Ass'y in the aperture stop-down direction (in the direction of the arrow Ⓒ). While keeping the Aperture Ring in this position, install the FC Unit Ass'y.
7) Tighten the FC Unit Ass'y Setscrews (61912026) × 3, (69113576).
   Apply the bond (Cemedine 551) to the heads of the FC Unit Ass'y Setscrews.

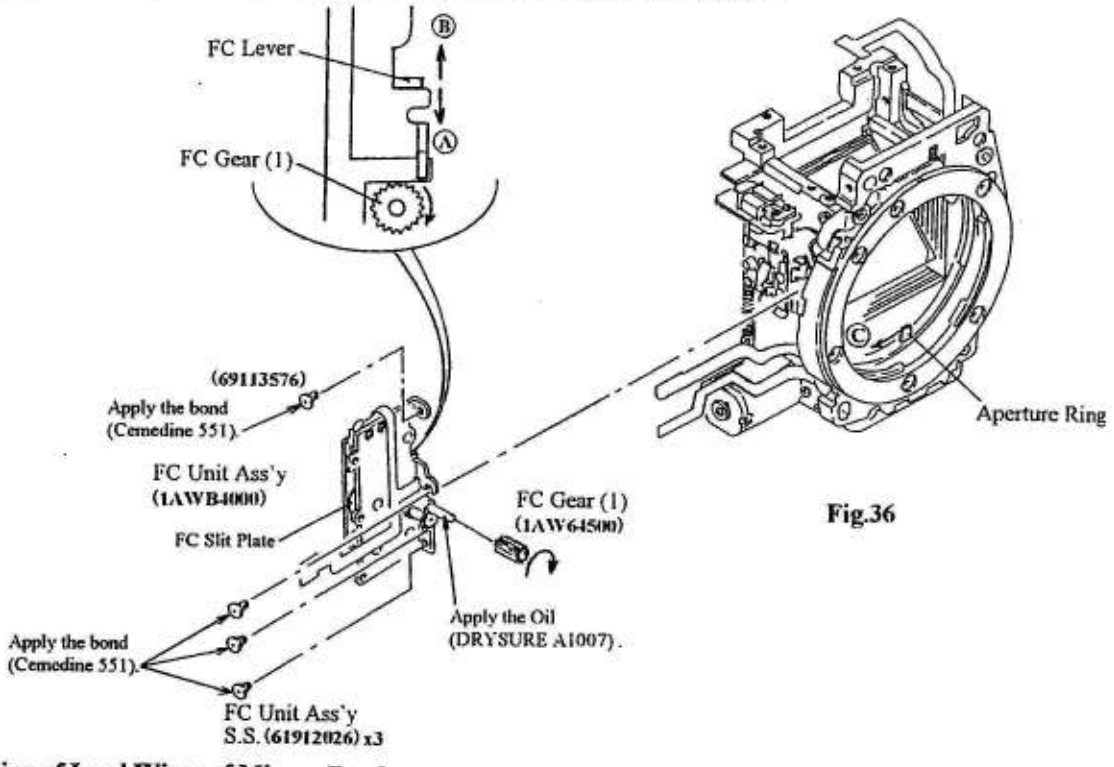

Fig.36

[Dressing of Lead Wires of Mirror Box]

a) Before installing the Mirror Box in the Body, dress the lead wires coming from the AV Board and Theta Board as shown in Fig. 37.

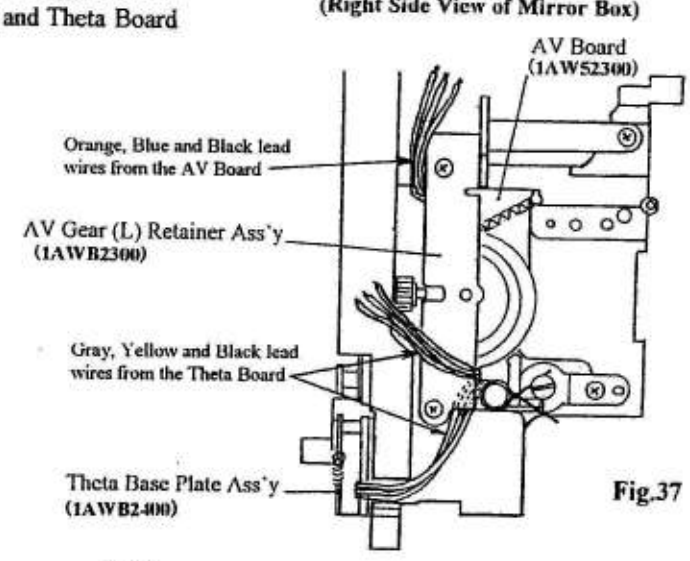

Fig.37

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B-6-2. Disassembly of Penta Prism

Notes :

- Black shielder has been applied to the gap between the Penta Prism and the Penta Prism Holder to prevent dust from entering the Viewfinder. Therefore, remove the black shielder before removing the Penta Prism.
- Take care not to flaw the Penta Prism, Focusing Screen or Finder Indicator Prism.

1) Peel off the Penta Prism Cover (17484200).
   Note :
   - The Penta Prism Cover is fixed to the Penta Prism Retaining Spring with double-stick tape.
2) Pick off the black shielder applied around the Penta Prism, using tweezers or the like.
3) Peel off the Mirror Cushion (1AW70200) and Penta Prism Dust-proof Moquette (1AH8 5000).
4) Push the end of the PG Lock Spring (L) and remove the Focusing Screen.
5) Pull out the PG Holder Shaft (1AW82900) and remove the Focusing Screen Holder Ass'y (1AWF2100).
6) Remove the Penta Prism Retaining Spring Setscrews (69113076) × 2 and take off the Penta Prism Retaining Spring (1AW82300).
7) Remove the Penta Prism Cover (17484200), Penta Prism (1AW82000) and Viewfinder Frame (1AW81400).
8) Remove the Finder Indicator Prism (1AW812 00).
   Note :
   - The Finder Indicator Prism is fixed to the Penta Prism Holder (1AW81000) with the bond (Cemedine 551).

[Notes after Installation of Penta Prism]

a) After the installation of the Penta Prism, make certain that there is no dust in the Viewfinder.
b) After the installation of the Penta Prism, apply the black shielder to the gap between the Penta Prism and the Penta Prism Holder.

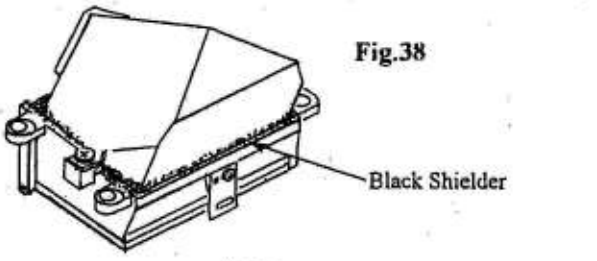

Fig.38

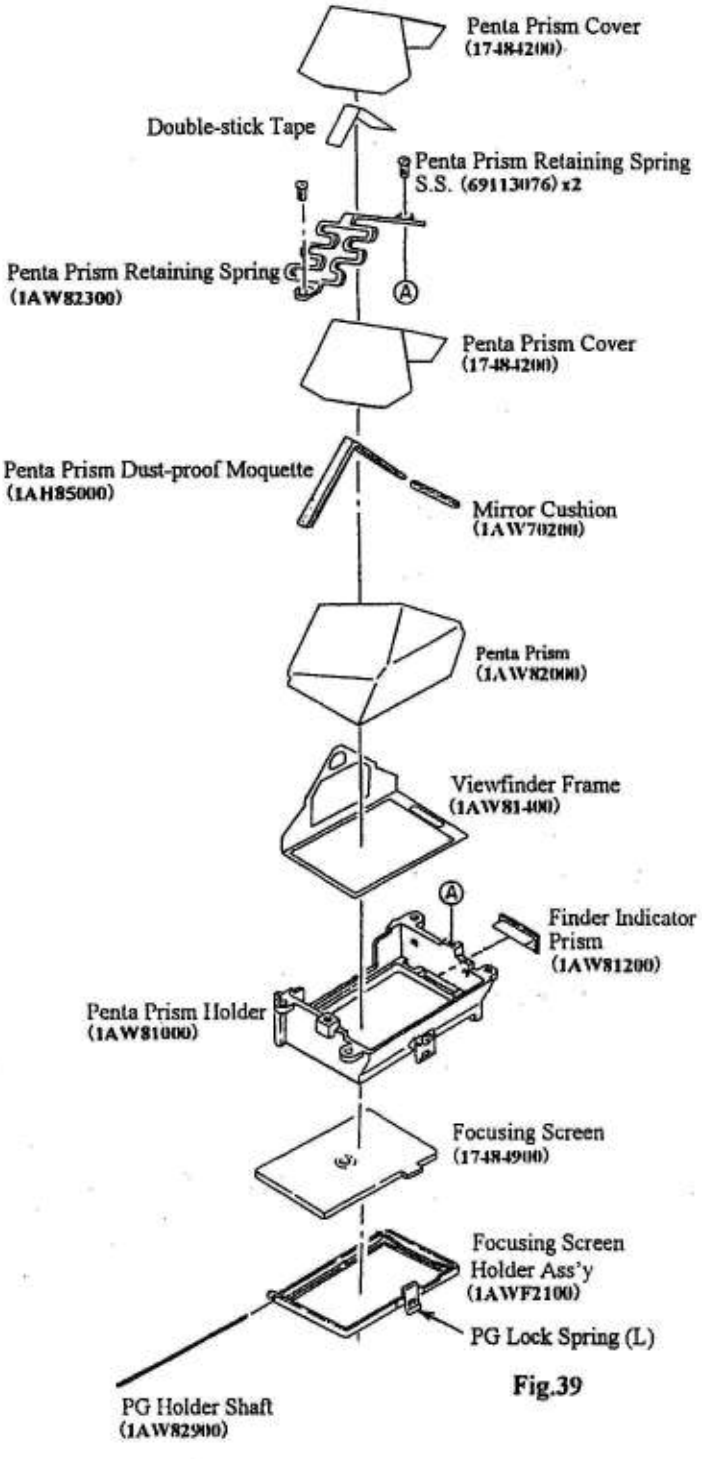

Fig.39

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B-6-3. Disassembly of Top Cover Ass'y

Notes :

- Take care not to bend or deform the switch contacts which are incorporated inside the Top Cover Ass'y.
- After installing the switch contacts, wipe them with lens cleaning paper with ether alcohol.
- In repair, take care not to lose any of the six Steel Balls which are incorporated in the Top Cover Ass'y.
- After tightening the Setscrews, apply the bond (Cemedine 551) to their heads.

[Chart for Disassembly of Top Cover Ass'y]

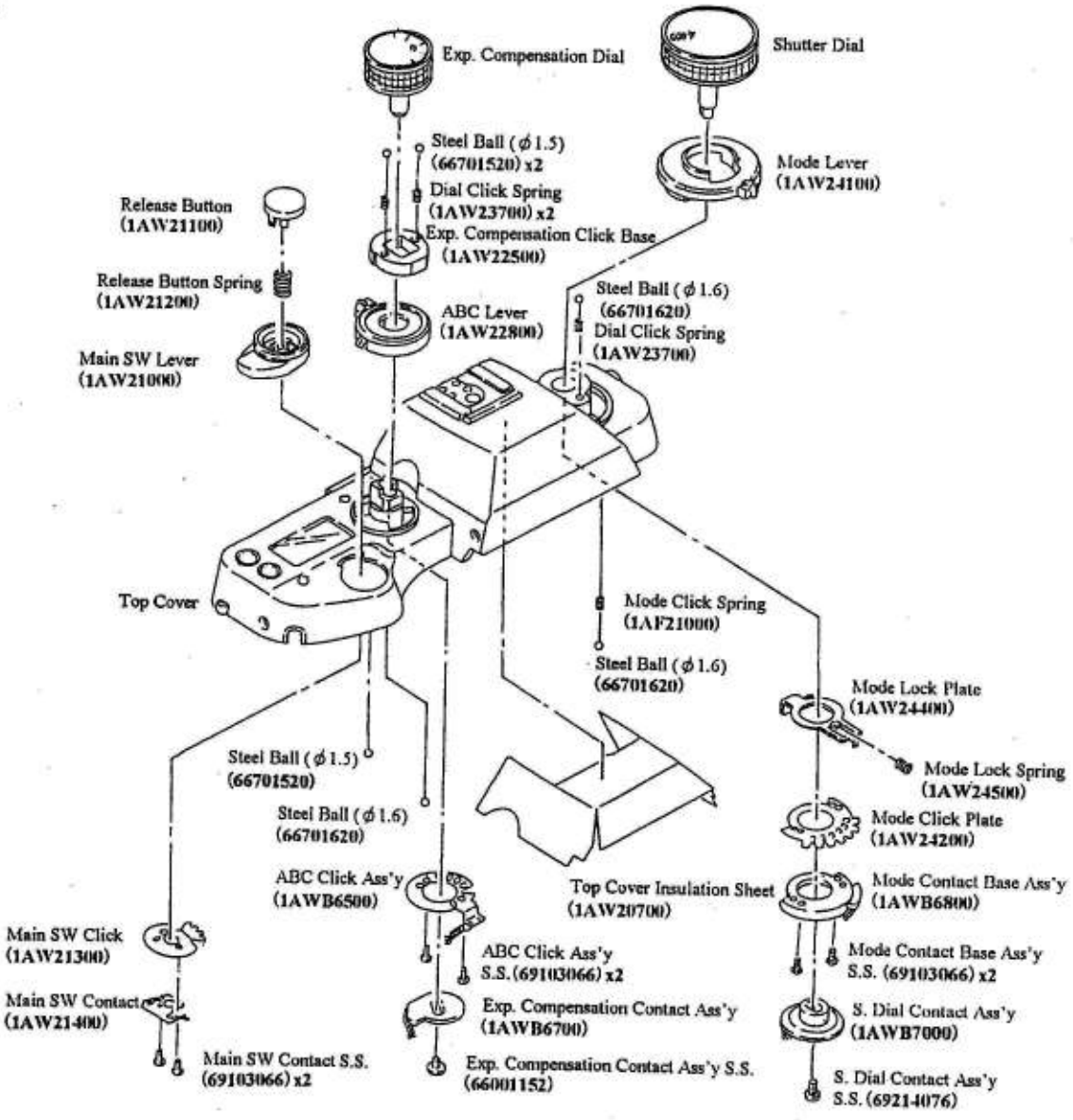
Exp. Compensation Dial
Shutter Dial
Steel Ball (ϕ1.5) (66701520) x2
Mode Lever (1AW24100)
Dial Click Spring (1AW23700) x2
Release Button (1AW21100)
Exp. Compensation Click Base (1AW22500)
Release Button Spring (1AW21200)
Steel Ball (ϕ1.6) (66701620)
ABC Lever (1AW22800)
Dial Click Spring (1AW23700)
Main SW Lever (1AW21000)
Top Cover
Mode Click Spring (1AF21000)
Steel Ball (ϕ1.6) (66701620)
Mode Lock Plate (1AW24400)
Steel Ball (ϕ1.5) (66701520)
Mode Lock Spring (1AW24500)
Steel Ball (ϕ1.6) (66701620)
Mode Click Plate (1AW24200)
ABC Click Ass'y (1AWB6500)
Top Cover Insulation Sheet (1AW20700)
Mode Contact Base Ass'y (1AWB6800)
Main SW Click (1AW21300)
ABC Click Ass'y S.S. (69103066) x2
Mode Contact Base Ass'y S.S. (69103066) x2
Main SW Contact (1AW21400)
Exp. Compensation Contact Ass'y (1AWB6700)
S. Dial Contact Ass'y (1AWB7000)
Main SW Contact S.S. (69103066) x2
Exp. Compensation Contact Ass'y S.S. (66001152)
S. Dial Contact Ass'y S.S. (69214076)

Fig.40

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(See Fig. 40)

1) Peel off the Top Cover Insulation Sheet (1AW20700).

Note :

- The Top Cover Insulation Sheet is fixed to the Top Cover with the bond (Cemedine 551).

2) Remove the S. Dial Contact Ass'y Setscrew (69224076) and take off the S. Dial Contact Ass'y (1AWB7000), Shutter Dial, Steel Ball (ϕ1.6) (66701620) and Dial Click Spring (1AW23700).
3) Remove the Mode Contact Base Ass'y Setscrews (69103066) × 2 and take off the Mode Contact Base Ass'y (1AWB6800), Mode Click Plate (1AW24200), Steel Ball (ϕ1.6) (66701620), Mode Click Spring (1AF21000) and Mode Lever (1AW24100).
4) Remove the Mode Lock Spring (1AW24500) and Mode Lock Plate (1AW24400).
5) Remove the Exp. Compensation Contact Ass'y Setscrew (66001152) and take off the Exp. Compensation Contact Ass'y (1AWB6700), Exp. Compensation Dial, Steel Balls (ϕ1.5) (66701520) × 2, Dial Click Springs (1AW23700) ×2, and Exp. Compensation Click Base (1AW22500).

Note :

- Install the Exp. Compensation Click Base with care not to mistake the orientation.

6) Remove the ABC Click Ass'y Setscrews (69103066) × 2 and take off the ABC Click Ass'y (1AWB6500), Steel Ball (ϕ1.6) (66701620) and ABC Lever (1AW22800).
7) Remove the Main SW Contact Setscrews (69103066) × 2 and take off the Main SW Contact (1AW21400), Main SW Click (1AW21300), Steel Ball (ϕ1.5) (66701520), Release Button (1AW21100), Release Button Spring (1AW21200) and Main SW Lever (1AW21000).
(See Fig. 41)
8) Remove the Shoe Contact Plate (1) Ass'y Setscrew (61914026) and take off the Shoe Contact Plate (1) Ass'y (1AQ27400).
9) Remove the Shoe Holding Plate Setscrew (61913022) and take off the Conduction Auxiliary Plate (3CU16600).
10) Shoe Holding Plate Setscrews (61913022) × 2 and take off the Accessory Shoe (1AM20200) W/ Shoe Plate Spring (1AM20300), Shoe Contact Ass'y (1AWB6400), Shoe Contact Plate Pin (13917600) and Shoe Holding Plate (1AW20600).

Note :

- The Shoe Plate Spring (1AM20300) is fixed to the Accessory Shoe (1AM20200) with the bond (Cemedine 551).

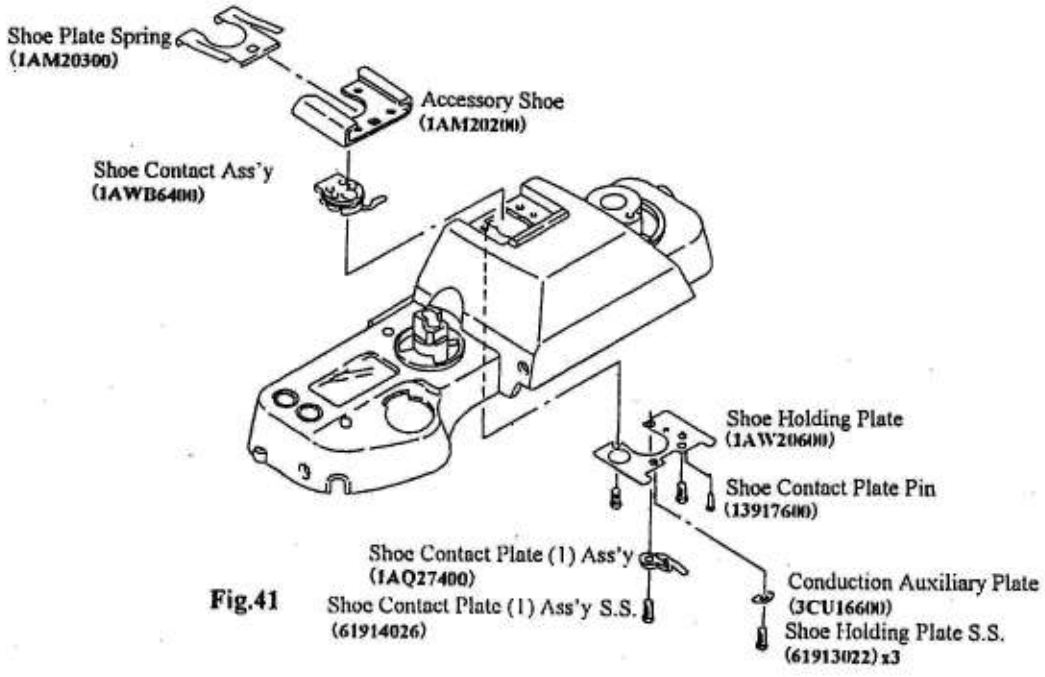

Fig.41

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[Notes on Reassembly of Top Cover]

* Install the switch contacts of the Top Cover in the positions as shown in Fig. 42.

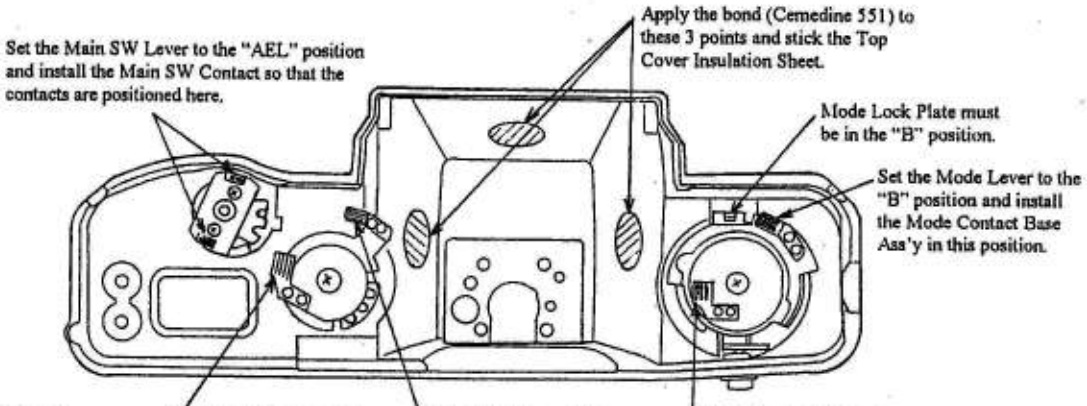
Apply the bond (Cemedine 551) to these 3 points and stick the Top Cover Insulation Sheet.
Set the Main SW Lever to the "AEL" position and install the Main SW Contact so that the contacts are positioned here.
Mode Lock Plate must be in the "B" position.
Set the Mode Lever to the "B" position and install the Mode Contact Base Ass'y in this position.
Set the Exp. Compensation Dial to the "0" position and install the Exp. Compensation Contact Ass'y in this position.
Set the ABC Lever to the "0" position and install the ABC Click Ass'y in this position.
Set the Shutter Dial to the "4000" position and install the S. Dial Contact Ass'y in this position.

Fig.42

[Chart for Greasing Points of Top Cover]

* As shown in Fig. 43, apply the Grease (FLOIL G-474B) to the specified points outside the Top Cover.

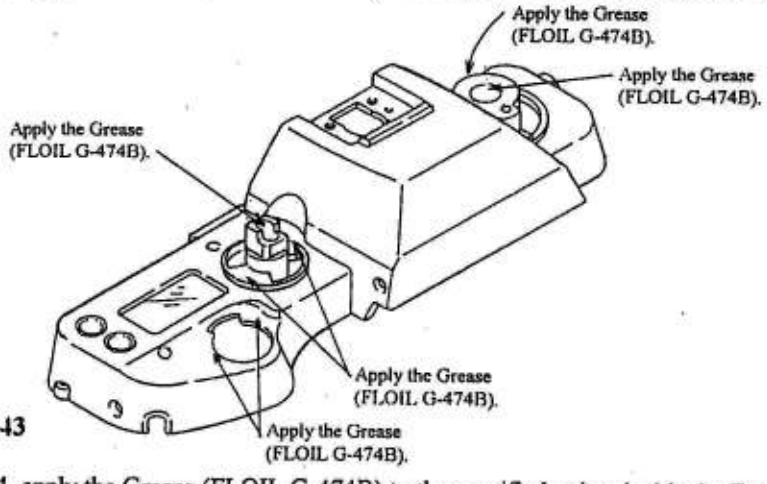
Apply the Grease (FLOIL G-474B).
Apply the Grease (FLOIL G-474B).
Apply the Grease (FLOIL G-474B).
Apply the Grease (FLOIL G-474B).
Apply the Grease (FLOIL G-474B).

Fig.43

* As shown in Fig. 44, apply the Grease (FLOIL G-474B) to the specified points inside the Top Cover.

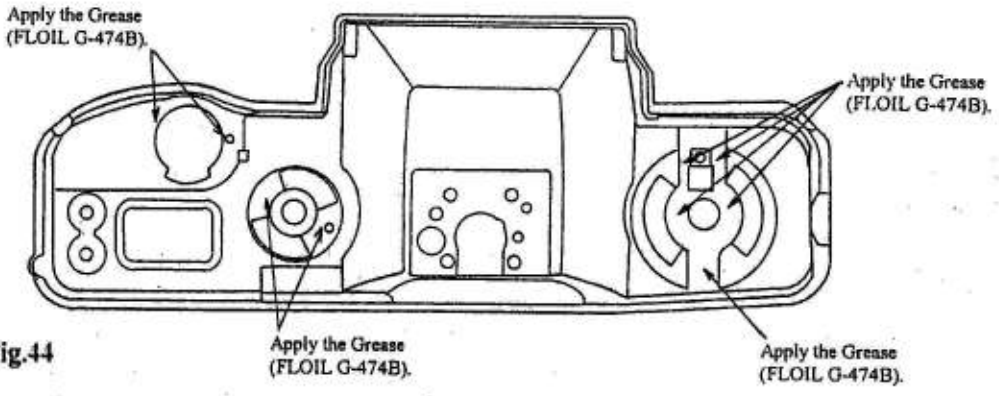

Fig.44

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[Reassembly Procedure for Exp. Compensation Dial]

1) Stick the Exp. Compensation Click Tape (1AW2 2700) on the burr side of the Exp. Compensation Click Plate (1AW22300) by aligning their centers.
2) Peel off the backing paper of the Exp. Compensation Click Tape and align the oval-shaped post of the Exp. Compensation Dial (1A W22000) with the oval hole in the Exp. Compensation Click Plate. Then while fitting the convex portion of the Exp. Compensation Dial into the concave portion in the Exp. Compensation Click Plate, stick these two parts together and press them against each other gently.
3) Fix the Exp. Compensation Dial and Exp. Compensation Click Plate to each other by applying the bond (Cemedine 551).
4) Apply the bond (Cemedine 551) to the whole periphery of the stepped central area on the top side of the Exp. Compensation Dial and to the cross-shaped surface.
5) While fitting the concave portion of the Exp. Compensation Dial onto the convex portion of the Exp. Compensation Name Plate (1AW21900), stick these two parts together and press them against each other gently.
6) Set the Exp. Compensation Dial Cover (1AW22 200) on the Exp. Compensation Dial.

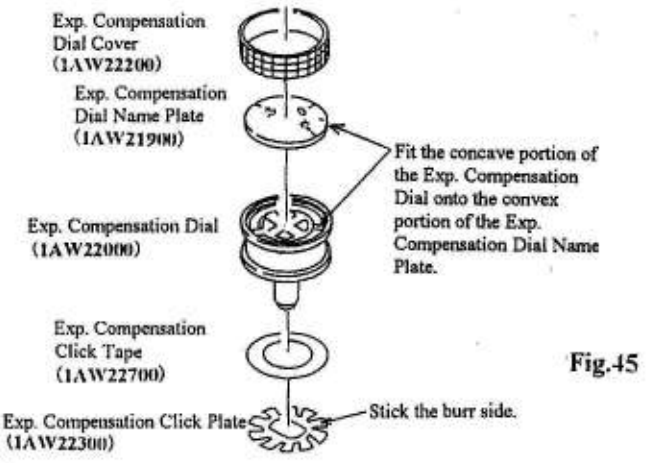
Exp. Compensation Dial Cover (1AW22200)
Exp. Compensation Dial Name Plate (1AW21900)
Fit the concave portion of the Exp. Compensation Dial onto the convex portion of the Exp. Compensation Dial Name Plate.
Exp. Compensation Dial (1AW22000)
Exp. Compensation Click Tape (1AW22700)
Stick the burr side.
Exp. Compensation Click Plate (1AW22300)

Fig.45

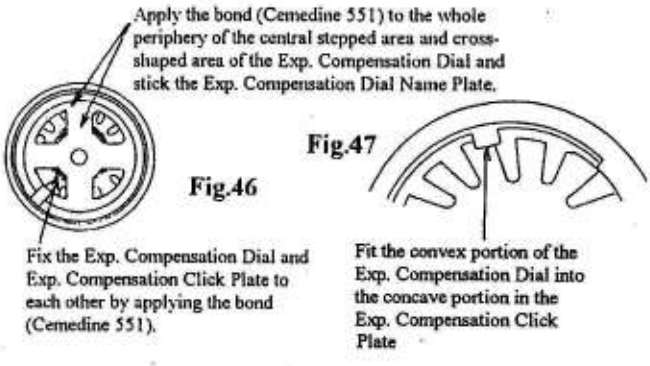
Apply the bond (Cemedine 551) to the whole periphery of the central stepped area and cross-shaped area of the Exp. Compensation Dial and stick the Exp. Compensation Dial Name Plate.
Fix the Exp. Compensation Dial and Exp. Compensation Click Plate to each other by applying the bond (Cemedine 551).
Fit the convex portion of the Exp. Compensation Dial into the concave portion in the Exp. Compensation Click Plate

Fig.46

Fig.47

[Reassembly Procedure for Shutter Dial]

1) Stick the Exp. Compensation Click Tape (1AW2 2700) on the burr side of the Shutter Dial Click Plate (1AW23600) by aligning their centers.
2) Peel off the backing paper of the Exp. Compensation Click Tape and while fitting the convex portion of the Shutter Dial (1AW23300) into the concave portion in the Shutter Dial Click Plate, stick these two parts together and press them against each other gently.
3) Fix the Shutter Dial and Shutter Dial Click Plate to each other by applying the bond (Cemedine 551).
4) Apply the bond (Cemedine 551) to the whole periphery of the stepped central area on the top side of the Shutter Dial and to the cross-shaped surface.
5) While fitting the concave portion of the Shutter Dial onto the convex portion of the Shutter Dial Name Plate (1AW23200), stick these two parts together and press them against each other gently.
6) Set the Shutter Dial Cover (1AW23500) on the Shutter Dial.

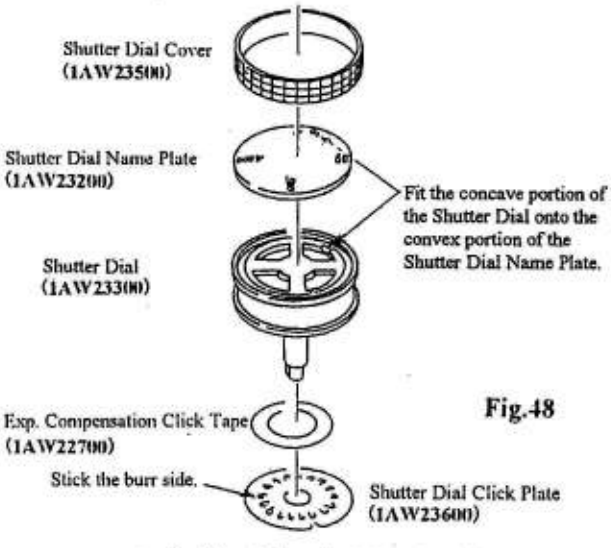
Shutter Dial Cover (1AW23500)
Shutter Dial Name Plate (1AW23200)
Fit the concave portion of the Shutter Dial onto the convex portion of the Shutter Dial Name Plate.
Shutter Dial (1AW23300)
Exp. Compensation Click Tape (1AW22700)
Stick the burr side.
Shutter Dial Click Plate (1AW23600)

Fig.48

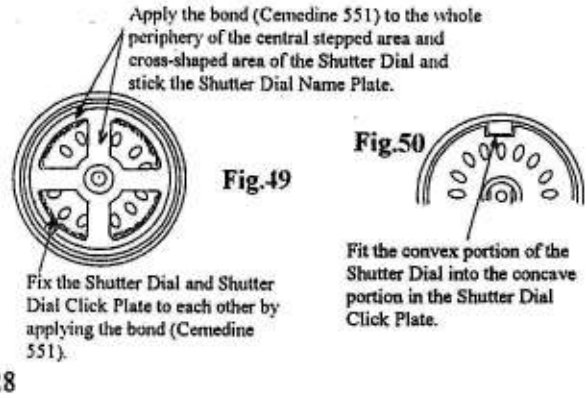
Apply the bond (Cemedine 551) to the whole periphery of the central stepped area and cross-shaped area of the Shutter Dial and stick the Shutter Dial Name Plate.
Fix the Shutter Dial and Shutter Dial Click Plate to each other by applying the bond (Cemedine 551).
Fit the convex portion of the Shutter Dial into the concave portion in the Shutter Dial Click Plate.

Fig.49

Fig.50

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B-7. DISASSEMBLY OF BACK COVER ASS'Y

[Chart for Disassembly of Back Cover Ass'y]

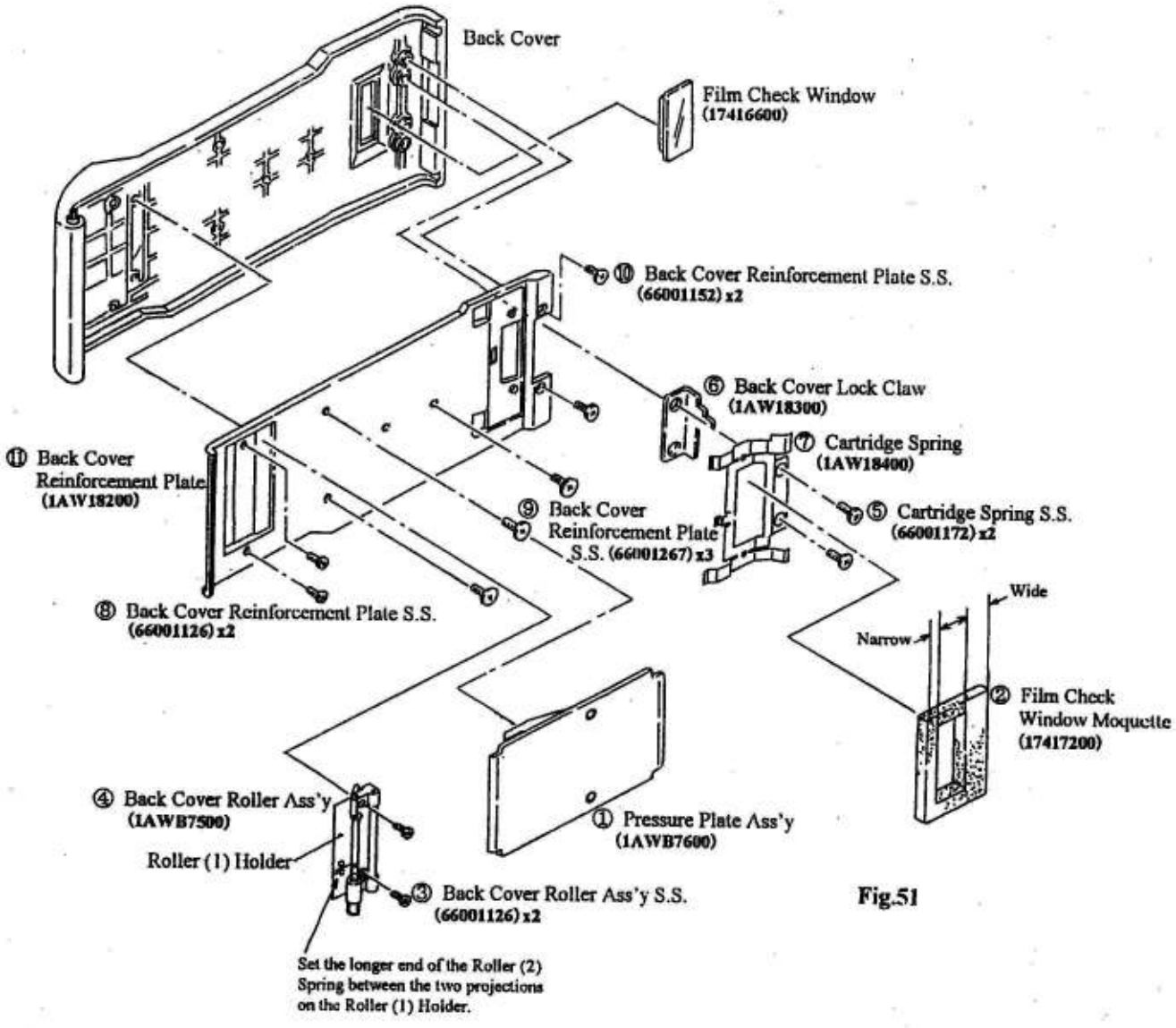
Back Cover
Film Check Window (17416600)
⑩ Back Cover Reinforcement Plate S.S. (66001152) x2
⑥ Back Cover Lock Claw (1AW18300)
⑦ Cartridge Spring (1AW18400)
⑪ Back Cover Reinforcement Plate (1AW18200)
⑨ Back Cover Reinforcement Plate S.S. (66001267) x3
⑤ Cartridge Spring S.S. (66001172) x2
⑧ Back Cover Reinforcement Plate S.S. (66001126) x2
Wide
Narrow
② Film Check Window Moquette (17417200)
④ Back Cover Roller Ass'y (1AWB7500)
① Pressure Plate Ass'y (1AWB7600)
Roller (1) Holder
③ Back Cover Roller Ass'y S.S. (66001126) x2
Set the longer end of the Roller (2) Spring between the two projections on the Roller (1) Holder.

Fig.51

B-7-1. Disassembly of Back Cover Ass'y

1) Remove the parts in the order of ① to ⑪ shown in Fig. 51.

[Notes on Reassembly of Back Cover Ass'y]

a) Do not use the Film Check Window Moquette (17417200) that has been peeled off once.
b) Stick the Film Check Window Moquette (17417200) in the position as shown in Fig. 51.
c) Set the longer end of the Roller (2) Spring between the two projections on the Roller (1) Holder.
d) The Film Check Window (17416600) is fixed with the bond (Cemedine 551). Usually, there is no need of removing the Film Check Window.

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B-8. DISASSEMBLY OF DATA BACK ASS'Y

[Chart for Disassembly of Data Back Ass'y]

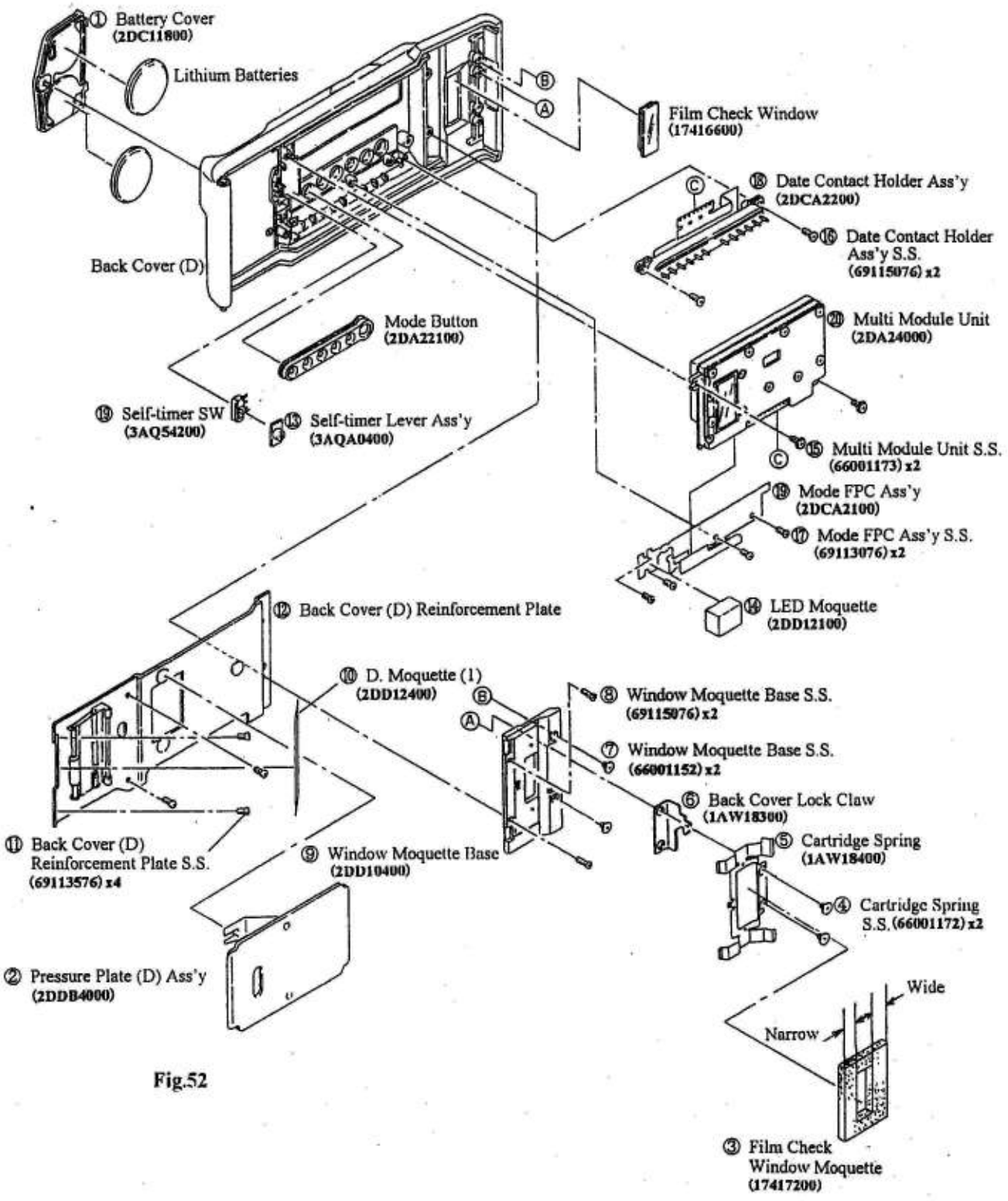
① Battery Cover (2DC11800)
Lithium Batteries
Back Cover (D)
Film Check Window (17416600)
⑱ Date Contact Holder Ass'y (2DCA2200)
⑯ Date Contact Holder Ass'y S.S. (69115076) x2
Mode Button (2DA22100)
⑳ Multi Module Unit (2DA24000)
⑲ Self-timer SW (3AQ54200)
⑬ Self-timer Lever Ass'y (3AQA0400)
⑮ Multi Module Unit S.S. (66001173) x2
⑲ Mode FPC Ass'y (2DCA2100)
⑰ Mode FPC Ass'y S.S. (69113076) x2
⑫ Back Cover (D) Reinforcement Plate
⑭ LED Moquette (2DD12100)
⑩ D. Moquette (1) (2DD12400)
⑧ Window Moquette Base S.S. (69115076) x2
⑦ Window Moquette Base S.S. (66001152) x2
⑥ Back Cover Lock Claw (1AW18300)
⑤ Cartridge Spring (1AW18400)
⑪ Back Cover (D) Reinforcement Plate S.S. (69113576) x4
⑨ Window Moquette Base (2DD10400)
④ Cartridge Spring S.S. (66001172) x2
② Pressure Plate (D) Ass'y (2DDB4000)
Wide
Narrow
③ Film Check Window Moquette (17417200)

Fig.52

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B-8-1. Removal of Multi Module Unit

1) Remove the parts in the order of ① to ⑳ shown in Fig. 52.
2) Unsolder the Red and Black lead wires (from Battery Contact) on the Multi Module Unit. (See Fig. 59)

[Notes on Reassembly of Back Cover Ass'y]

a) Do not use the Film Check Window Moquette (17417200) that has been peeled off once.
b) Stick the Film Check Window Moquette (17417200) in the position as shown in Fig. 52.
c) Set the longer end of the Roller (2) Spring between the two prongs of the fork on the Roller (1) Holder. (See Fig. 53)
d) The Film Check Window (17416600) is fixed with the bond (Cemedine 551). Usually, there is no need of removing the Film Check Window.
e) Once the Multi Module Unit (2DA24000) has been removed, make the adjustment of imprinting position.

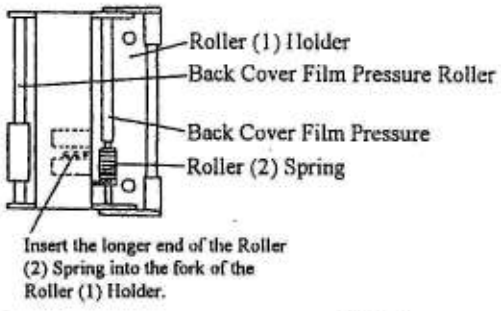
Roller (1) Holder
Back Cover Film Pressure Roller
Back Cover Film Pressure
Roller (2) Spring
Insert the longer end of the Roller (2) Spring into the fork of the Roller (1) Holder.

Fig.53

B-8-2. Reassembly of Back Cover (D)

(See Fig. 55)

1) Apply the bond (Cemedine 551) to the Back Cover (D) and install the Mode Button Cover MGs (2DA22500) × 2.
2) Install the M. Indication Window (2DA22600) and from inside the Back Cover (D), apply the bond (Cemedine 551) to the peripheral side face of the M. Indication Window to secure it.
3) Install the Back Cover Caps (2DA21800) × 2 and secure them by applying the bond (Cemedine 551).
4) Install the Battery Cap Screw Socket (2DB11200) and secure it by applying the bond (Cemedine 551) to its periphery. After that, stick the D. Rubber (2) (2DC10400).
5) Install the Battery Contact Holder Ass'y (2DDB1100) and tighten the Battery Contact Holder Ass'y Setscrews (69113576) × 3.

Note :

- Take care that the bond (Cemedine 551) does not come out around.

6) Install the Mode Button Cover Spring (2DA22400) and Mode Button Cover Shafts (2DA22300) × 2 in the Mode Button Cover (2DD10600) and install the resultant assembly in the Back Cover (D).

Notes :

- Make certain that the necks of the Mode Button Cover Shafts are positioned as shown in Fig. 54.
- Secure the Back Cover Panel (2DD10500) by applying the bond (THREE BOND #1549) after completion of installing all the other parts of the Back Cover (D).

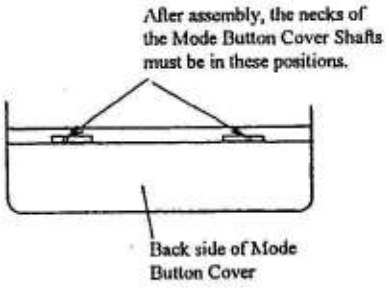

Fig.54

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[Chart for Reassembly of Back Cover (D)]

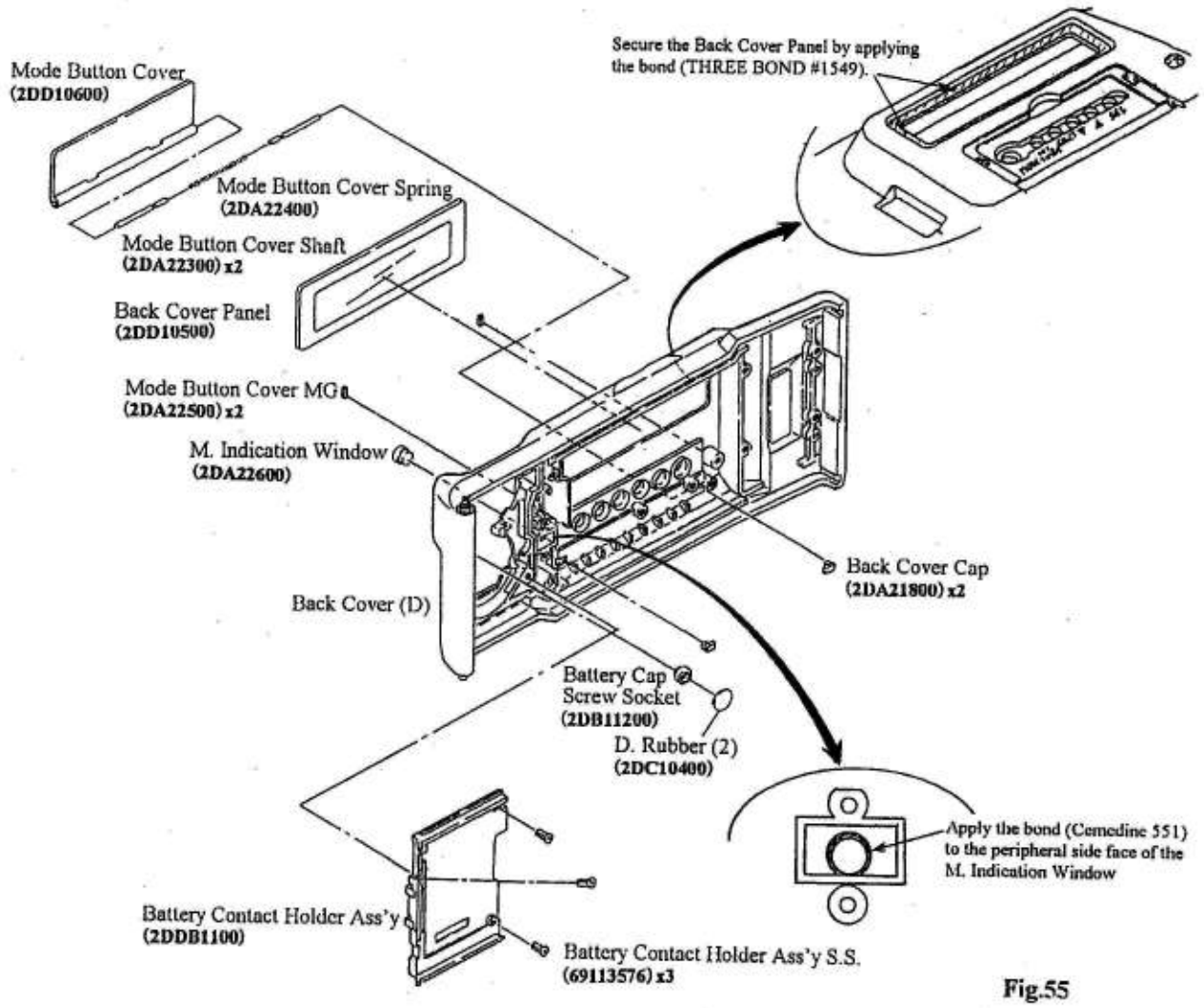
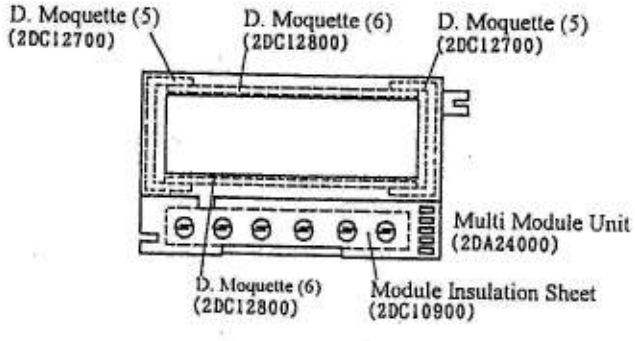

Secure the Back Cover Panel by applying the bond (THREE BOND #1549).
Mode Button Cover (2DD10600)
Mode Button Cover Spring (2DA22400)
Mode Button Cover Shaft (2DA22300) x2
Back Cover Panel (2DD10500)
Mode Button Cover MG (2DA22500) x2
M. Indication Window (2DA22600)
Back Cover Cap (2DA21800) x2
Back Cover (D)
Battery Cap Screw Socket (2DB11200)
D. Rubber (2) (2DC10400)
Apply the bond (Cemedine 551) to the peripheral side face of the M. Indication Window
Battery Contact Holder Ass'y (2DDB1100)
Battery Contact Holder Ass'y S.S. (69113576) x3

Fig.55

B-8-3. Reassembly of Multi Module Unit

1) Stick the Module Insulation Sheet (2DC10900) on the Multi Module Unit (2DA24000).
2) Stick the D. Moquettes (5) (2DC12700)×2 and D. Moquettes (6) (2DC12800)×2.
3) Solder the Mode FPC (2DC12400) to the Multi Module Unit (6 points).
   Note :
   - Do not solder the first to third soldering lands from the left on the Multi Module Unit, since they are free lands.
4) Solder the Body Connect FPC of the Date Contact Holder Ass'y (2DCA2200) to the Multi Module Unit (11 points).
5) Solder the Gray lead wire coming from the Date Contact Holder Ass'y to the land on the Mode FPC.


D. Moquette (5) (2DC12700)
D. Moquette (6) (2DC12800)
D. Moquette (5) (2DC12700)
Multi Module Unit (2DA24000)
D. Moquette (6) (2DC12800)
Module Insulation Sheet (2DC10900)

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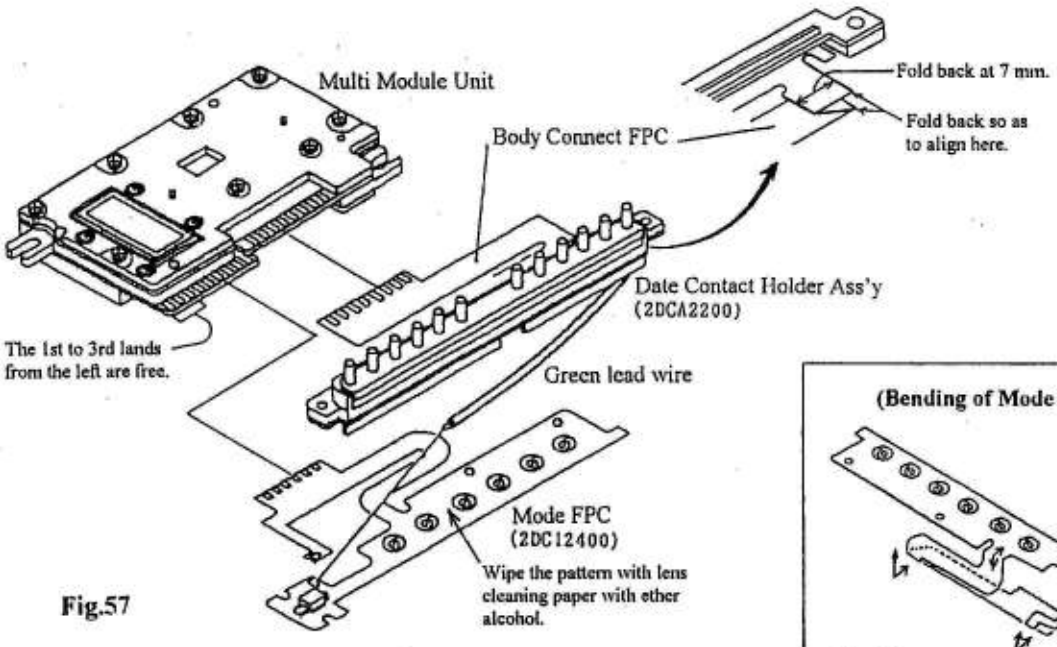
Multi Module Unit
Body Connect FPC
Fold back at 7 mm.
Fold back so as to align here.
Date Contact Holder Ass'y (2DCA2200)
The 1st to 3rd lands from the left are free.
Green lead wire
Mode FPC (2DC12400)
Wipe the pattern with lens cleaning paper with ether alcohol.

Fig.57

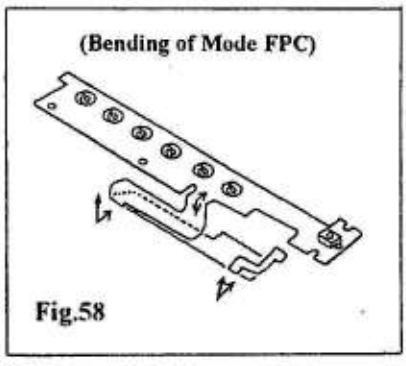

Fig.58

6) Solder the Black lead wire (from Battery Contact (–)) to the land on the Mode FPC.
7) Solder the Mode FPC to the Multi Module Unit (1 point).
8) Solder the Red lead wire (from Battery Contact (+)) to the land on the Mode FPC.

Note :

- Do not solder the center soldering land on the Multi Module Unit, since it is a free land.

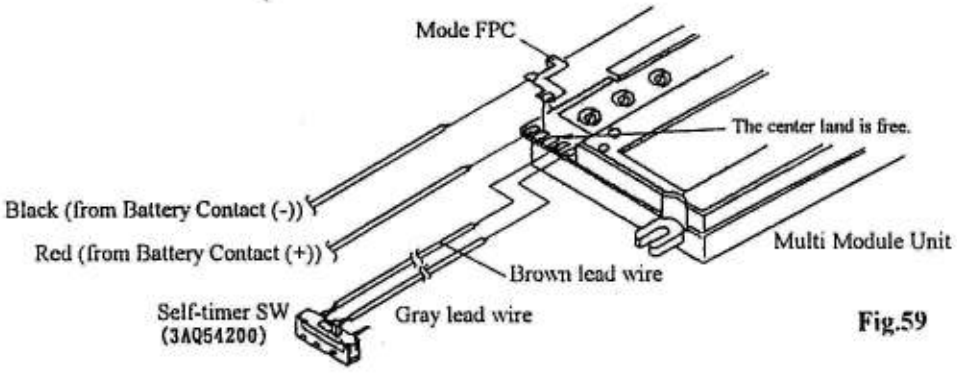

Fig.59

B-8-4. Installation of Multi Module Unit on Back Cover (D)

(See Fig. 52)

1) Set the Mode Button (2DA22110) in the Back Cover (D).
2) Wipe the pattern on the Mode FPC with lens cleaning paper with ether alcohol. (See Fig. 57)
   Install the Mode FPC and tighten the Mode FPC Setscrews (69113576)×4.
3) Install the Date Contact Holder Ass'y (2DCA2200) and tighten the Date Contact Holder Ass'y Setscrews (69115076)×2.
4) Dress the Mode FPC and Body Connect FPC as shown in Fig. 59.
5) Install the Multi Module Unit (2DA22400) and tighten the Multi Module Unit Setscrews (66001173)×2 temporarily.
6) Adjust the imprinting position by moving the Multi Module Unit right or left.

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7) Tighten up the Multi Module Unit Setscrews (66001173) × 2. Apply the bond (Cemedine 551) to the heads of the Multi Module Unit Setscrews.
8) Install the Self-timer Switch (3AQ54200) and Self-timer Lever Ass'y (3AQA0400).
9) Stick the LED Moquette (2DD12100) on the Main FPC.

Notes :

- Install the Self-timer Lever Ass'y(3AQA0400) so that its red mark is positioned up.
- Dress the Red and Black lead wires (from Battery Contacts) without crossing them over the Battery Contact Holder.

[Chart for Forming of Mode FPC and Body Connect FPC]

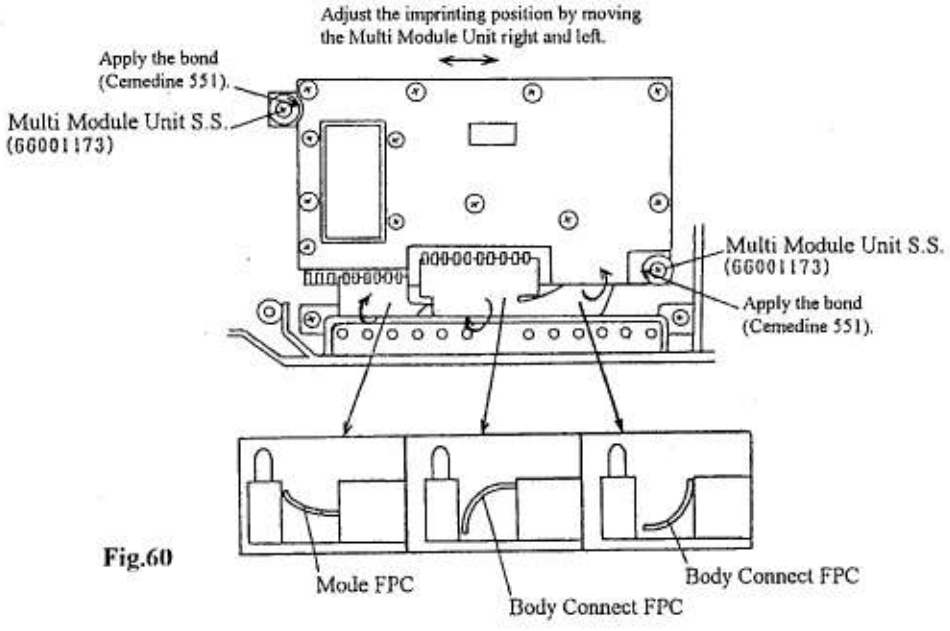
Adjust the imprinting position by moving the Multi Module Unit right and left.
Apply the bond (Cemedine 551).
Multi Module Unit S.S. (66001173)
Multi Module Unit S.S. (66001173)
Apply the bond (Cemedine 551).
Mode FPC
Body Connect FPC
Body Connect FPC

Fig.60

[Chart for Greasing Points on Film Pressure Rollers]

* Apply the Grease (FLOIL G-474B) to both ends of each of the Back Cover Roller (1) (1AA16300), Back Cover Film Pressure (1AQ19700) and Back Cover Film Pressure Roller (1AA16800).

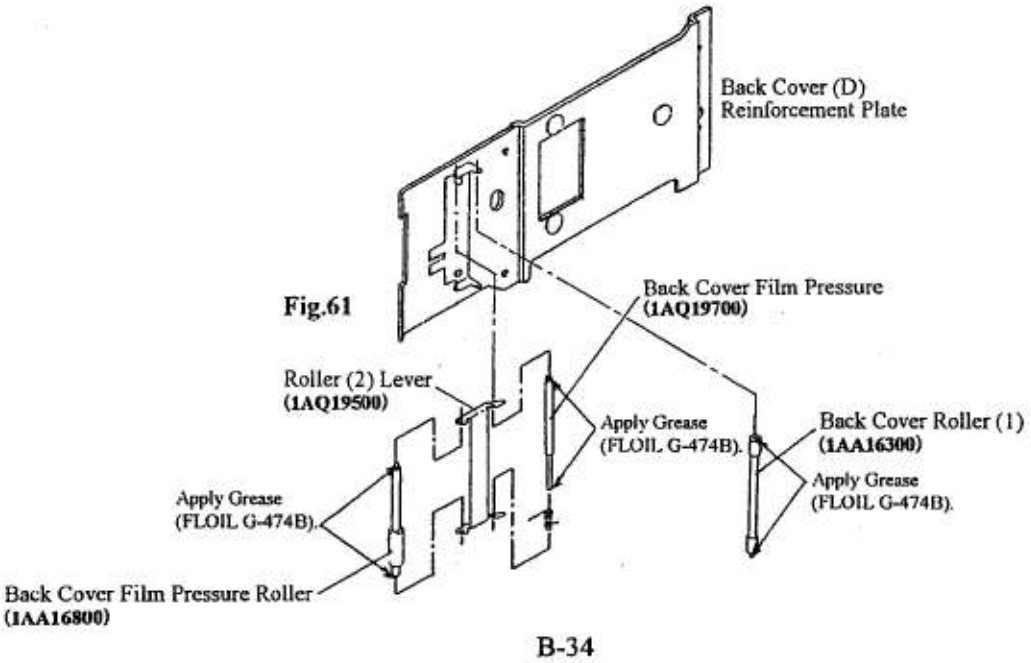
Back Cover (D) Reinforcement Plate
Back Cover Film Pressure (1AQ19700)
Roller (2) Lever (1AQ19500)
Apply Grease (FLOIL G-474B).
Back Cover Roller (1) (1AA16300)
Apply Grease (FLOIL G-474B).
Apply Grease (FLOIL G-474B).
Back Cover Film Pressure Roller (1AA16800)

Fig.61

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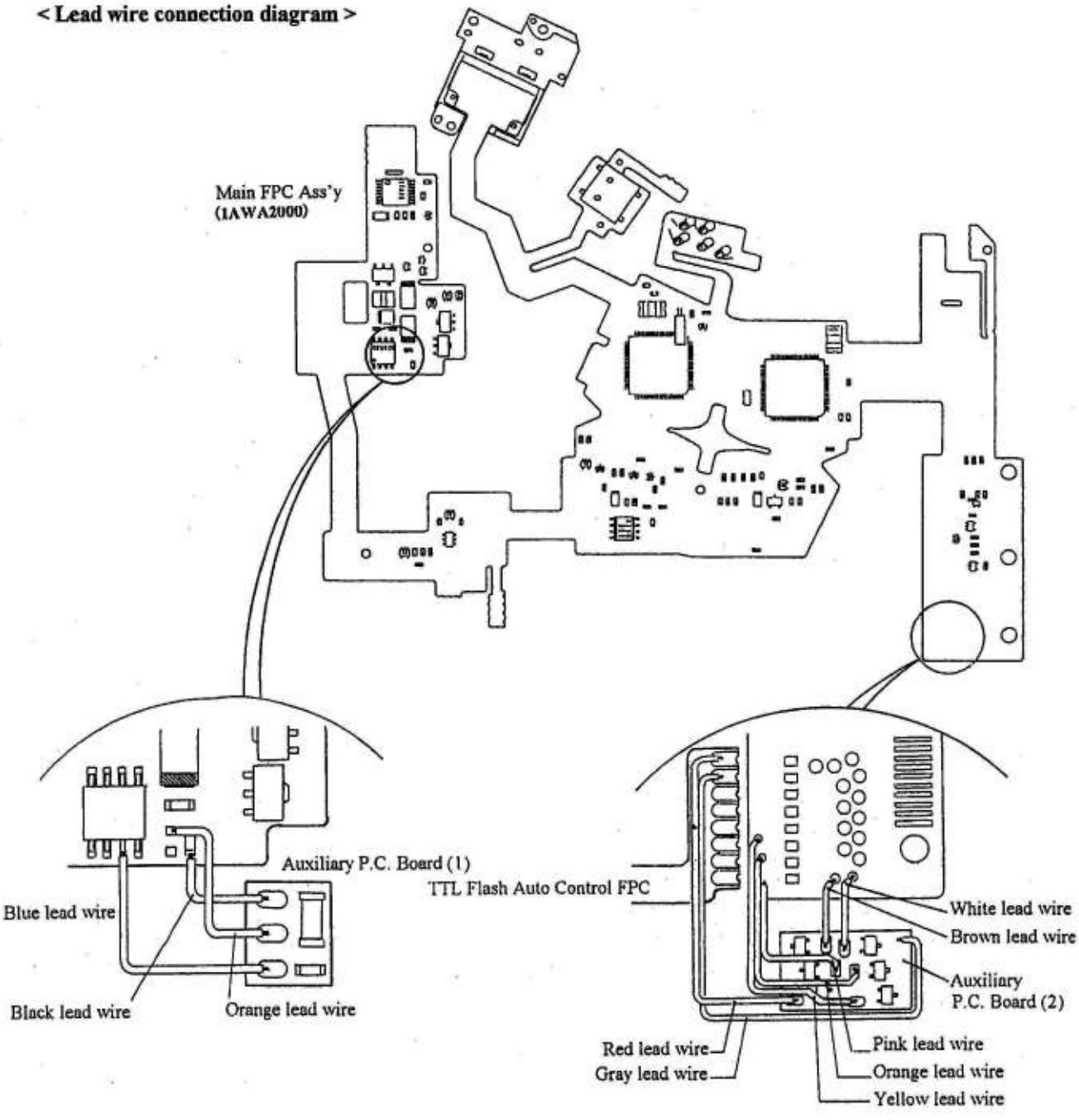
■ PARTS MODIFICATION LIST

[1] Modification of Main FPC Ass'y

In this camera, two types of Main FPC Ass'y have been used in the course of improving the product quality.
This service manual describes the new type Main FPC Ass'y.
Follow the repair procedures described below to repair the old type Main FPC Ass'y.

< Auxiliary P.C. Boards >
In initial products, the Auxiliary P.C. Board (1) and Auxiliary P.C. Board (2) are incorporated to improve the product quality.
The new type Main FPC Ass'y has been improved so that the Auxiliary P.C. Board (1) and Auxiliary P.C. Board (2) are disused.

< Lead wire connection diagram >



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< About repair >

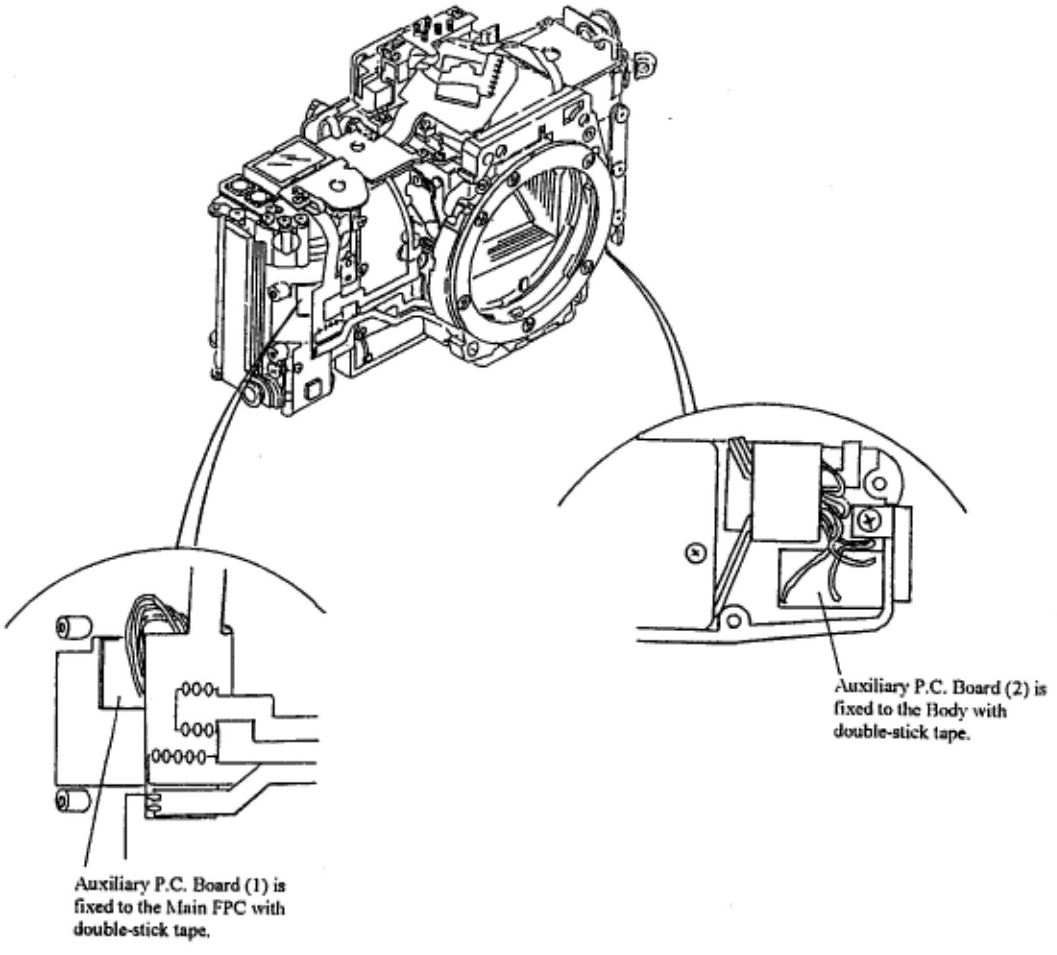
① There is no interchangeability between the old type Main FPC Ass'y and the new type Main FPC Ass'y. For repair, therefore, remove the Auxiliary P.C. Board (1) and Auxiliary P.C. Board (2) and install the new type Main FPC Ass'y in the Body.

② The old type Main FPC Ass'y will not be supplied. Only the new type Main FPC Ass'y will be supplied.

< Location of Auxiliary P.C. Boards >

① The Auxiliary P.C. Board (1) is fixed to the Main FPC in the left area of the Body with double-stick tape.

② The Auxiliary P.C. Board (2) is fixed to the bottom right of the Body with double-stick tape.


Auxiliary P.C. Board (2) is fixed to the Body with double-stick tape.
Auxiliary P.C. Board (1) is fixed to the Main FPC with double-stick tape.

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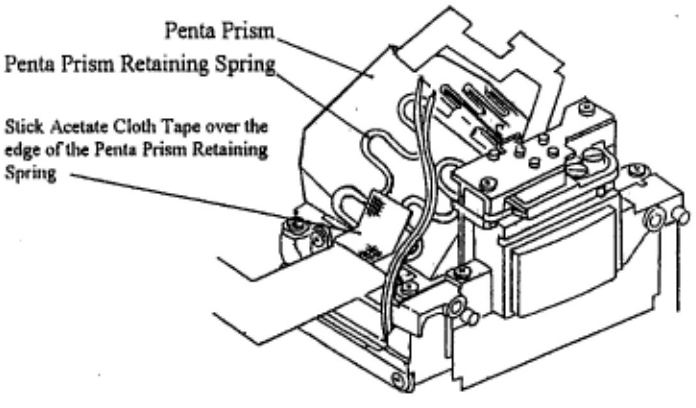
[2] Disuse of Acetate Cloth Tape

< Description >

In initial products, Acetate Cloth Tape is stuck on the Penta Prism Retaining Spring to prevent the Main FPC from being broken by the edge of the Penta Prism Retaining Spring.

< Improvement >

A hole in the Main FPC has been added so that the Main FPC does not come in contact with the edge of the Penta Prism Retaining Spring and thus the Acetate Cloth Tape is disused.



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[3] Disuse of PG Light-Shield Curtain

< Description >

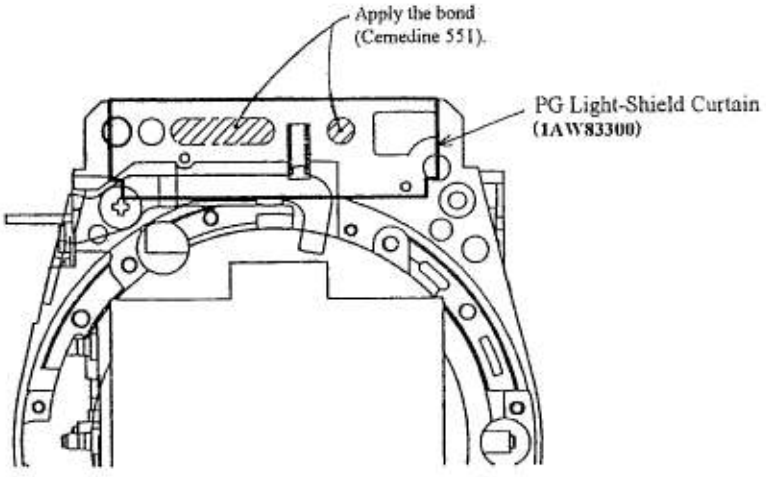
In initial products, the PG Light-Shield Curtain (1AW83300) is stuck on the front surface of the Mirror Box with the bond (Cemedine 551) to prevent the noise that could be made when the Lens Lock Lever is moved.

< Improvement >

The shape of the Front Cover has been changed so that the PG Light-Shield Curtain is disused.

< Notes on Repair >

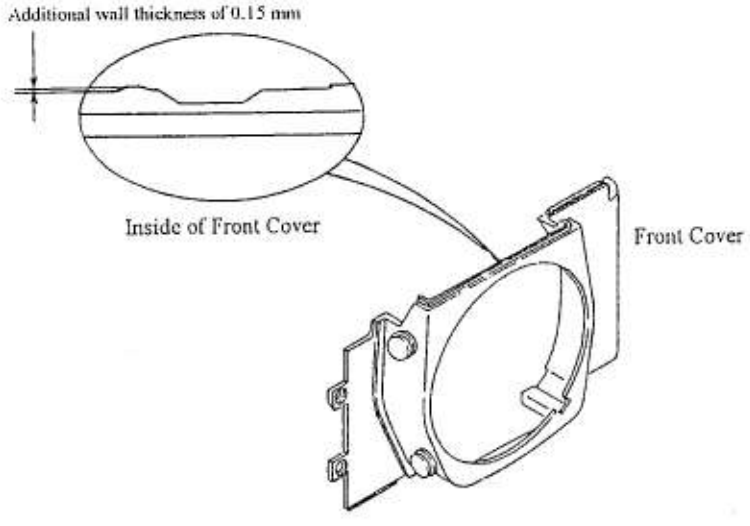
a) Take care that the bond (Cemedine 551) does not adhere to any part other than the Mirror Box.
b) When installing the Front Cover of the changed shape, remove the PG Light-Shield Curtain.



(Front View of Mirror Box)

< How to Identify the New Type Front Cover >

The wall thickness of the Front Cover is partially added toward its inside by 0.15 mm.



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[4] Faulty Operation of Lens Lock Lever

< Description >

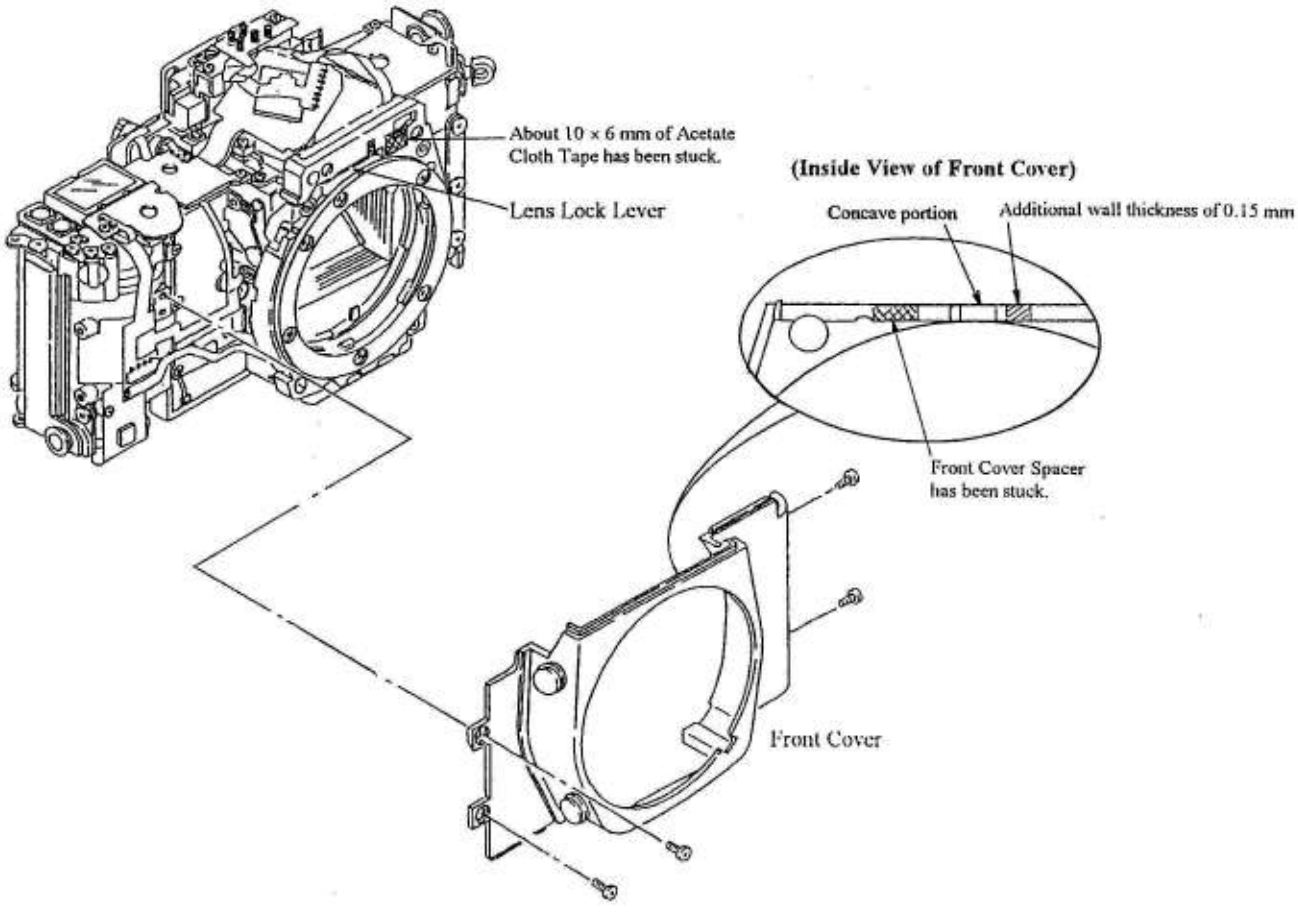
When the Front Cover improved at [3] (with the additional wall thickness of 0.15 mm in the upper area inside) has been installed, the area of the additional wall thickness of the Front Cover can interfere with the Lens Lock Lever, thus causing faulty operation of the Lens Lock Lever. As a temporary measure to avoid this problem, the Front Cover Spacer has been stuck on the inside surface of the Front Cover. Or Acetate Cloth Tape has been stuck on the front surface of the Mirror Box.

< Improvement >

As the permanent measure, the wall thickness of the Front Cover is increased toward its inside properly.

< Note on Repair >

When the old Front Cover is replaced with a new Front Cover improved by the permanent measure, peel off the Acetate Cloth Tape.


About 10 × 6 mm of Acetate Cloth Tape has been stuck.
Lens Lock Lever
(Inside View of Front Cover)
Concave portion
Additional wall thickness of 0.15 mm
Front Cover Spacer has been stuck.
Front Cover

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[5] Disuse of Temporarily Used Washers

< Description >

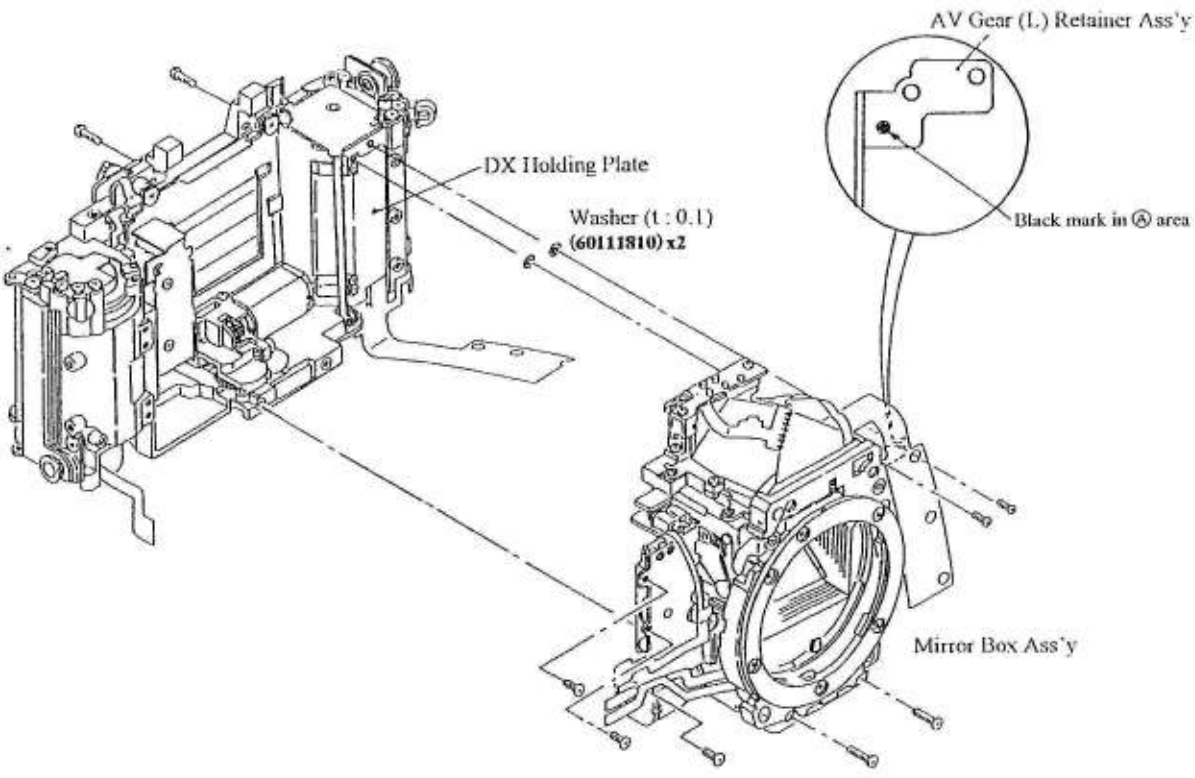
As a temporary measure, the Washers (60111810) × 2 (t : 0.1) were stuck between the AV Gear (L) Retainer Ass'y and the Body and DX Holding Plate. However, the shape of the AV Gear (L) Retainer Ass'y has been changed and the Washers are disused.

< How to Identify the New Type AV Gear (L) Retainer Ass'y >

The new type AV Gear (L) Retainer Ass'y is identified by a black mark put in the Ⓐ area.

< Notes on Repair >

a) When the AV Gear (L) Retainer Ass'y or the Mirror Box Ass'y is replaced with a new one, remove the Washers.
b) Take care not to lose the Washers during repair.



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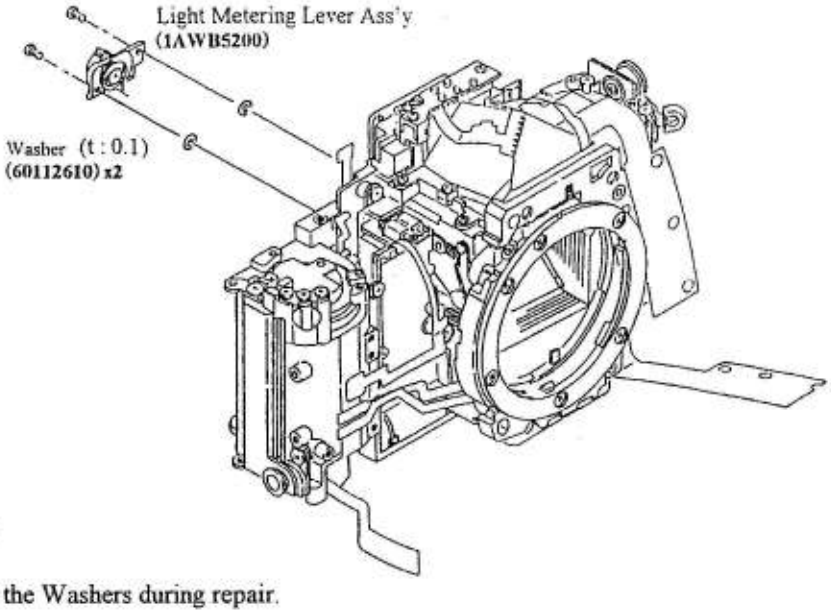
[6] Disuse of Temporarily Used Washers

< Description >

As a temporary measure, the Washers (60112610) × 2 (t : 0.1) were stuck on the Body where the Light Metering Lever Ass'y (1AWB5200) is mounted. However, the shape of the Body has been changed and the Washers are disused.

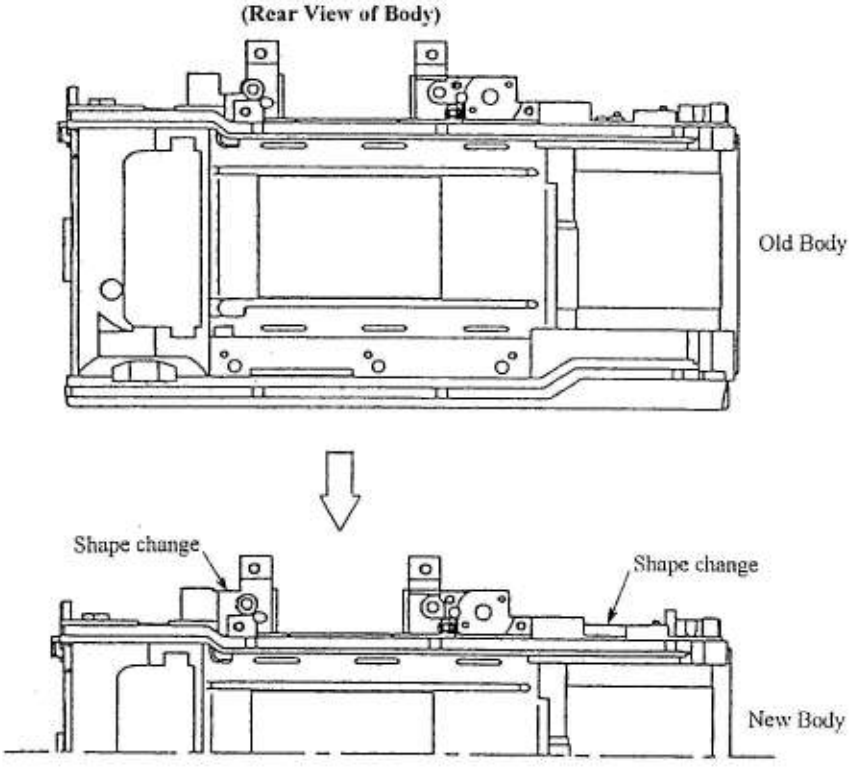


< Note on Repair >

Take care not to lose the Washers during repair.

< How to Identify the New Type Body >

The new type Body has been changed in shape as shown :



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[7] Addition of Acetate Cloth Tape

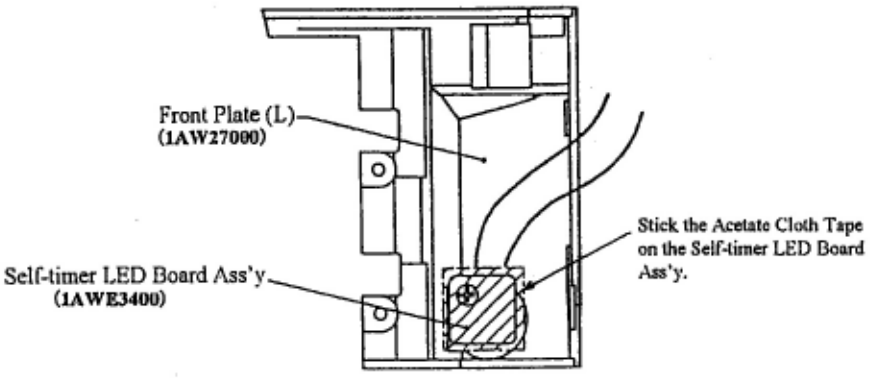
< Description >

The Main FPC Ass'y (1AWE3000) of the changed shape can cause a short circuit between the Self-timer LED Board Ass'y (1AWE3400) and the Main FPC. To prevent this trouble, Acetate Cloth Tape has been added as shown below.

< Position where Acetate Cloth Tape is to be Stuck >

Stick the Acetate Cloth Tape on the Self-timer LED Board Ass'y (1AWE3400) on the Front Plate (L) (1AW27000).

(Back View of Front Plate (L))



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C. ADJUSTMENT PROCEDURES, ETC.

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C-1. ADJUSTMENTS OF MECHANISMS

C-1-1. Adjustment of Open F. Stop Signal Contact Position

* When the Open F. Stop Signal Base Plate Ass'y has been replaced, adjust the position of the Open F. Stop Signal Contact.

〔Tool for Adjustment〕

- Planar F1.4/50 MM Lens

〔Adjustment Procedure〕

1) Loosen the Open F. Stop Signal Base Plate Ass'y Setscrews (69103576) × 2.
2) Set the Planar F1.4/50 Lens on the body mount.
3) Adjust the position of the Open F. Stop Signal P.C. Board so that the Open F. Stop Signal Contact is aligned with the triangle mark on the Open F. Stop Signal P.C. Board.
4) Tighten the Open F. Stop Signal Base Plate Ass'y Setscrews.

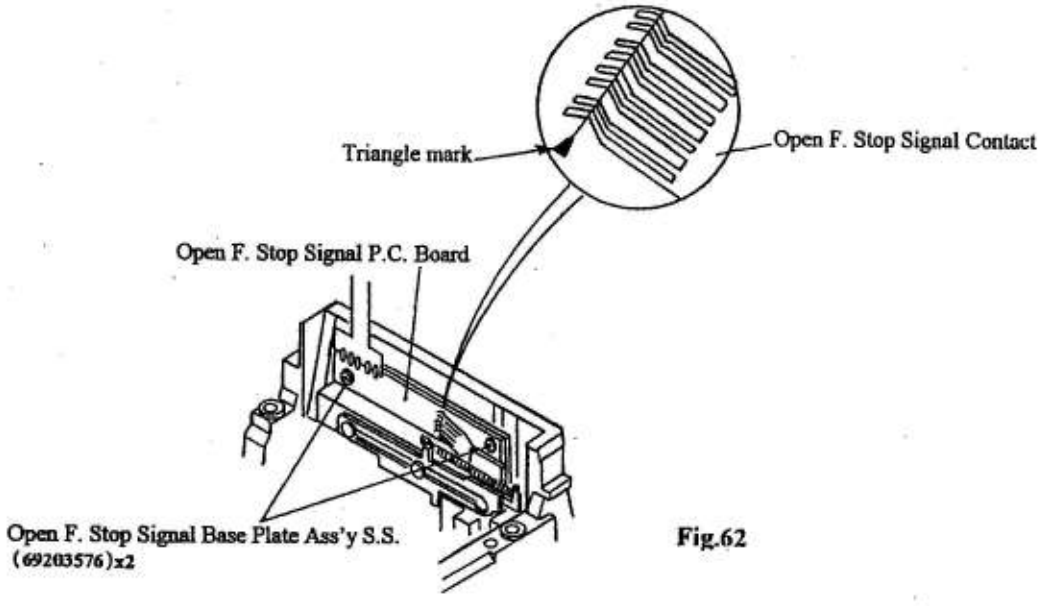

Fig.62

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C-1-2. Adjustment of AV Gear (L) Ass'y Position (Aperture Value)

1) Position the cut portion of the AV Gear (L) Ass'y (1AWE2600) horizontal.
2) Turn the Aperture Coupling Plate of the Aperture Ring Holding Plate Ass'y (1AWB2500) in the aperture opening direction (in the direction of the arrow Ⓐ) until it comes in contact with the stopper.
3) While maintaining the states obtained at 1) and 2), install the Aperture Ring Holding Plate Ass'y and engage its AV Gear (S) with the AV Gear (L) Ass'y.
4) Tighten the Aperture Ring Holding Plate Ass'y Setscrews.
5) Turn the Aperture Coupling Plate in the aperture stop-down direction (in the direction of the arrow Ⓑ). Then release the Aperture Coupling Plate and make certain that the Aperture Coupling Plate returns smoothly in the aperture opening direction by the force of the AV Spring.
6) When the Aperture Coupling Plate has returned in the open F. stop position, make certain that the cut portion of the AV Gear (L) Ass'y is in the horizontal position.

(Right Side View of Mirror Box)

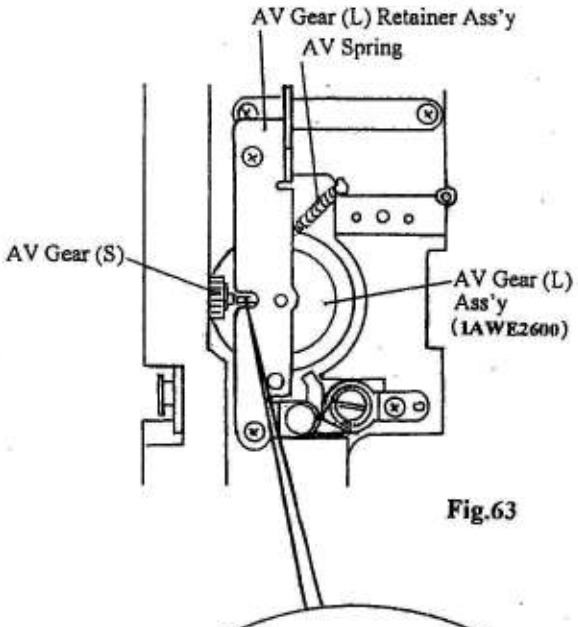


Fig.63

(Front View of Mirror Box)

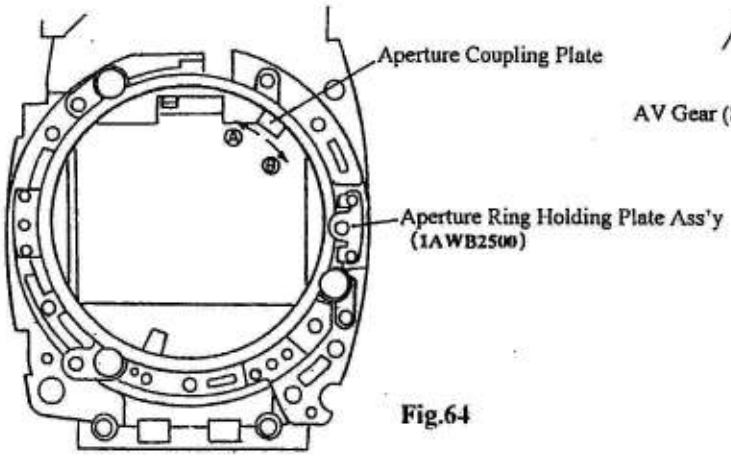
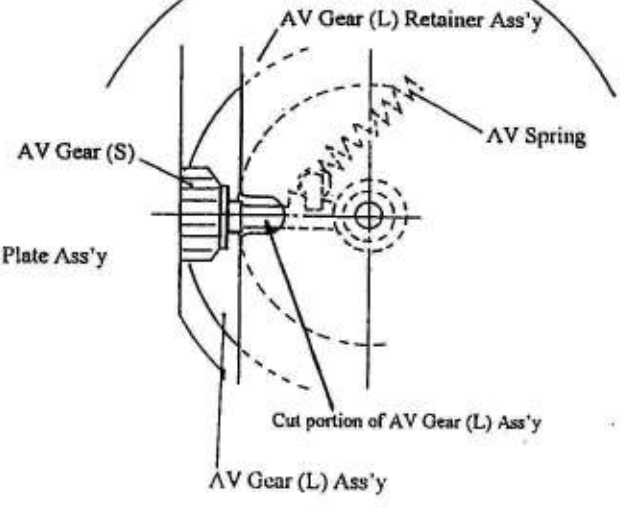


Fig.64



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C-1-2. Adjustment of Viewfinder Indication Positions

* Place your eye at the center of the Eye-piece Lens and make adjustment so that all the indications (flash ready indicator, shutter speed, aperture value, metering indicator, manual exposure mark, exposure compensation marks, exposure warning / exposure meter and exposure counter) can been seen without vignetting.

〔Tool for Adjustment〕

- Regulated DC Power Supply

〔Adjustment Procedure〕

1) Loosen the Finder Indicator Cover Ass'y Setscrews (69203076) × 2.
2) Turn ON the switch of the Regulated DC Power Supply.
   Then set the voltage of the Regulated DC Power Supply to about 5.0 V.
3) Turn OFF the switch of the Regulated DC Power Supply.
4) Connect the Pink lead wire of the Finder Indicator Cover Ass'y to the (+) terminal of the Regulated DC Power Supply and the White lead wire to the (–) terminal.
5) Turn ON the switch of the Regulated DC Power Supply.
6) Look in the viewfinder through the Eye-piece Lens and adjust the position of indications in the viewfinder by moving the Finder Indicator Cover Ass'y.
7) Tighten the Finder Indicator Cover Ass'y Setscrews.
8) Lock the Finder Indicator Cover Ass'y Setscrews by applying the bond (Cemedine 551) to their heads.

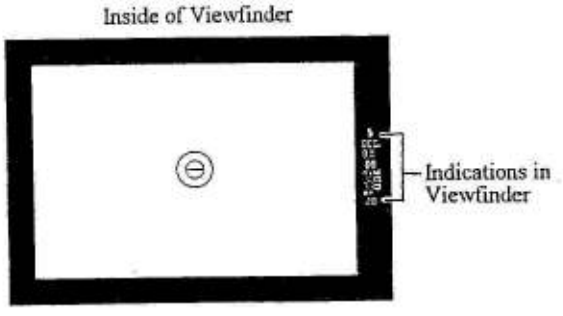

Fig.65

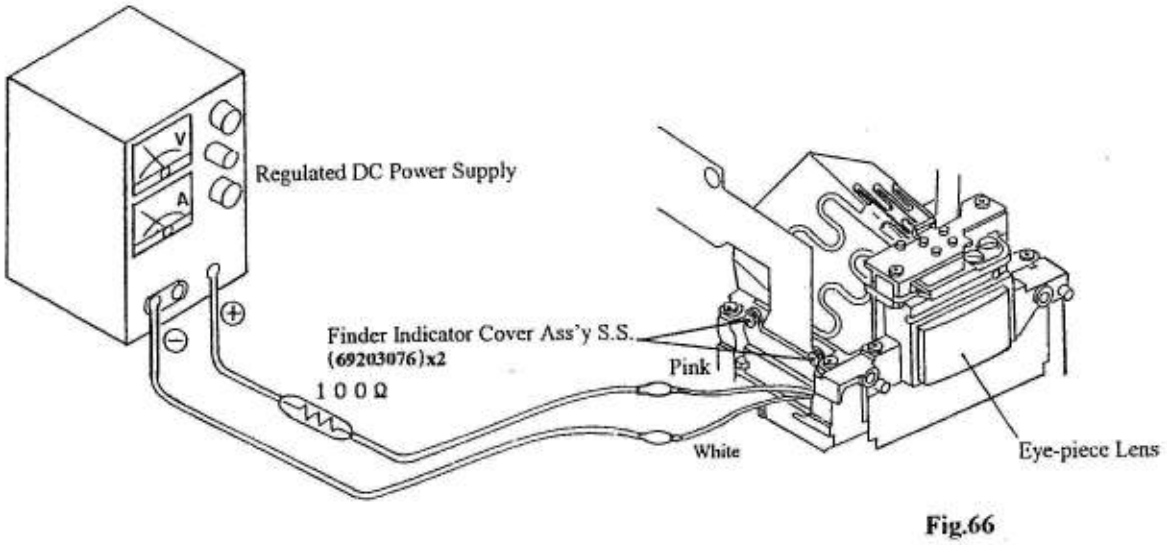

Fig.66

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C-1-4. Adjustment of Spot Light Metering Position

* Adjust the position of the light metering sensor (SPD) to ensure correct spot light metering.
* Once the Eye-piece Ass'y (1AWF2300) or the Light Metering FPC Ass'y (1AWE2200) has been replaced, be sure to make this adjustment of spot light metering position.

〔Tools for Adjustment〕

- EF-8000 or EF-5000 multi camera tester
- Planar F 1.4/50 MM Lens
- Black chart (to be prepared)

〔Preparation of Chart〕

- Prepare a chart of about 40 mm × 90 mm of low-reflectivity black paper.

〔Adjustment Procedure〕

1) Loosen the Accessory Shoe Base Setscrews (69113076) ×2 slightly.
2) Install the Top Cover Ass'y temporarily.
3) Set the Planar F 1.4/50 MM Lens on the camera.
4) Set exposure mode to "AV".
5) Set the Metering Mode Select Lever to the spot metering mark "⊙".
6) Turn ON the Main Switch.
7) Fix the black chart vertically to the light source surface of the multi camera tester with Scotch tape.
8) Set the brightness of the multi camera tester to "LV 15".

(Preparation of Chart)

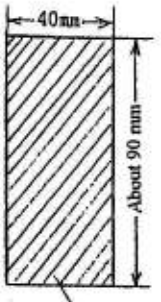

Fig.67

Black paper of low reflectivity

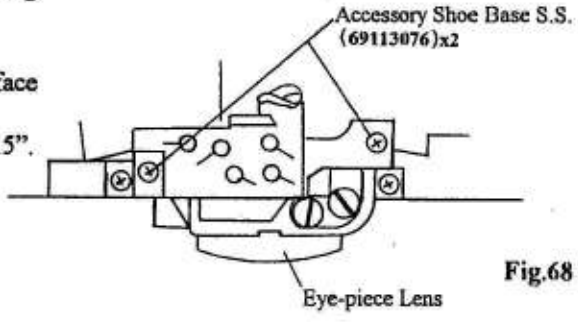

Fig.68

(Top View of Accessory Shoe Base)

(Light Source Area of Multi Camera Tester)

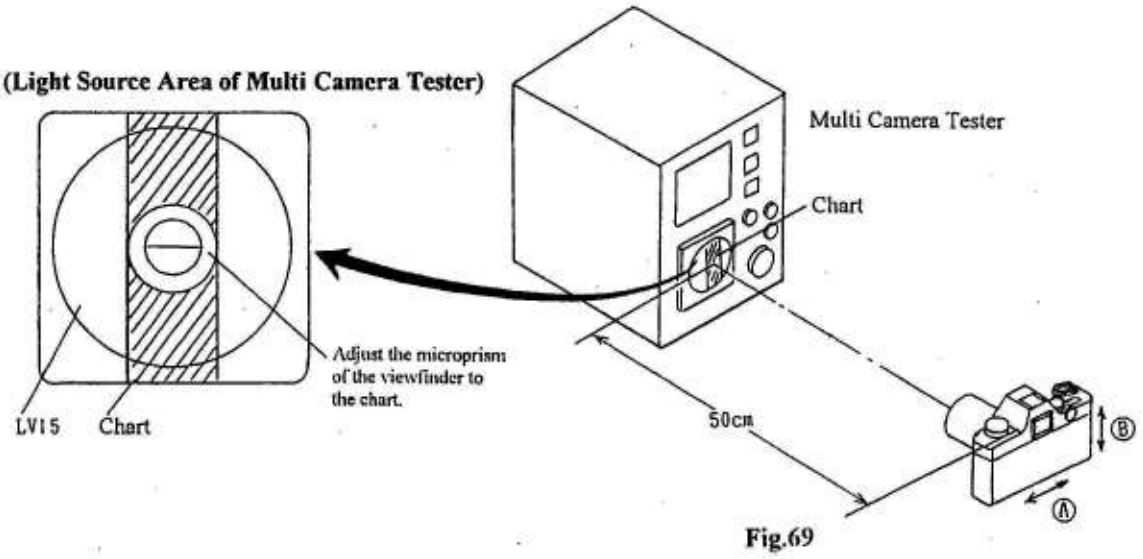

Fig.69

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9) Set the camera at 50 cm from the black chart.
10) Focus the viewfinder by turning the Distance Ring of the Lens. In doing so, adjust the microprism area (about 5 mm in diameter) of the viewfinder to the side lines of the black chart rectangle.
11) Look into the viewfinder and swing the camera gently right and left (in the direction of the arrow Ⓐ). (See Fig. 69) Adjust by turning the Adjusting Pin ⓐ so that the shutter speed indicator shows the slowest speed at swinging.
* Remove the Top Cover Ass'y for this adjustment.
12) Repeat steps 10) and 11).
13) Remove the black chart and fix it with the long side of the rectangle in the horizontal position.
14) Set the camera at 50 cm from the black chart.
15) Focus the viewfinder by turning the Distance Ring of the Lens. In doing so, adjust the microprism area (about 5 mm in diameter) of the viewfinder to the side lines of the black chart rectangle.
16) Look into the viewfinder and swing the camera gently up and down (in the direction of the arrow Ⓑ). (See Fig. 69) Adjust by turning the Adjusting Pin ⓑ so that the shutter speed indicator shows the slowest speed at swinging.
17) Repeat steps 15) and 16).
18) Tighten the Accessory Shoe Base Setscrews (69113076) × 2.
19) Lock the Adjusting Pins by applying the bond (Cemedine 551).

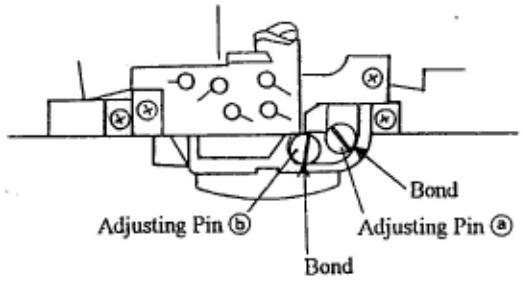

Fig.70

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C-1-5. Adjustment of Flange Back Distance

① Distance from the Body Mount surface to the film rail surface:

⇒ 45.43 ± 0.02 mm

For the adjustment, insert appropriate washers between the Body Mount and the Mirror Box.

Adjusting washers: 0.05 mm (12866600), 0.02 mm (12866700)

② Level difference between the film rail surface and the pressure plate rail surface:

⇒ 0.20 ± 0.02 mm

C-1-6. Adjustment of Viewfinder Focusing

〔Tool for Adjustment〕
- Planar F1.4/50 MM Lens

1. Rough Adjustment of Viewfinder Focusing

＊ For adjustment, replace the washers under the Penta Prism Holder. (See Fig. 26)

① If focusing is not achieved even when the focus ring is turned to the infinity position
⇒ The finder back distance is too long, so shorten (lower) the position of the focusing plate.

② If focusing occurs before the focus ring is turned to the infinity position
⇒ The finder back distance is too short, so lengthen (raise) the position of the focusing plate.

2. Fine Adjustment of Viewfinder Focusing

① Use the Adjusting Pin in the Mirror Box only for a fine adjustment to correct such a small defocus that the Index is found within ±1/4 of the "∞" mark of the Lens (within 0.1 mm with the standard lens Planar F 1.4/50 mounted).

② When the adjustment of viewfinder focusing has been made by use of the Adjusting Pin in the Mirror Box, be sure to operate the shutter several times and make certain that viewfinder focusing is proper.
Upon completion of the adjustment, lock the Adjusting Pin by applying the bond (THREE BOND 1521B).

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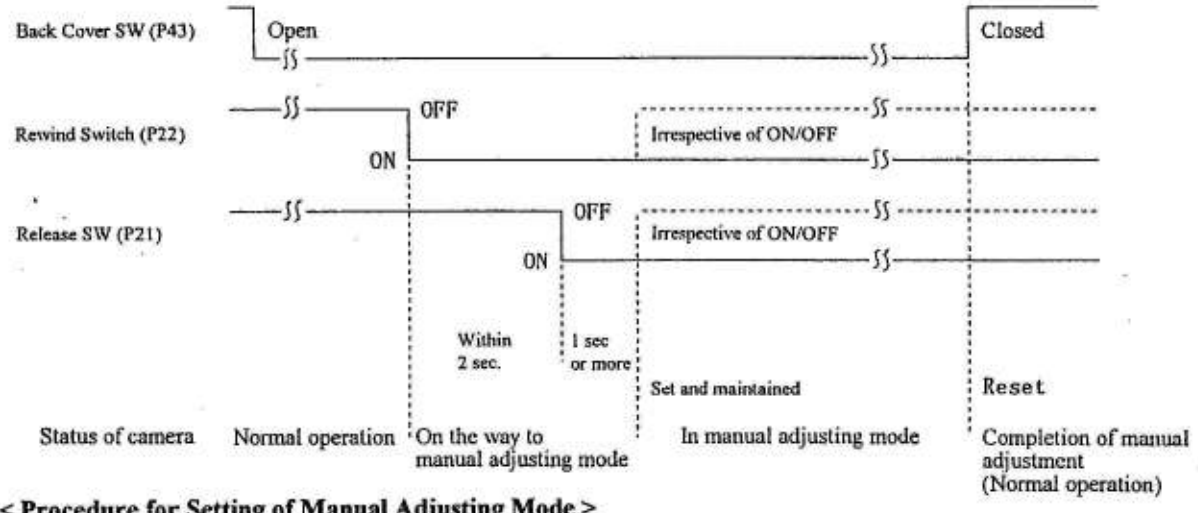
C-2. ADJUSTMENTS OF COMPENSATION VALUES (MANUAL ADJUSTMENTS)

* This camera permits the adjustments of compensation values (adjusted values) by its manual operation only. Therefore, adjustments can be made only with the camera and measuring instruments, without communication with any special adjusting tools.

C-2-1. Explanation of Manual Adjusting Mode

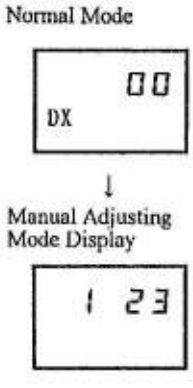
1. Transition from Normal Mode to Manual Adjusting Mode

With the Main Switch turned ON and the Back Cover open, turn ON the Rewind Switch by pressing the Shutter Release Button and at the same time (within two seconds), turn ON the Release Switch by pressing the Shutter Release Button and keep the two switches ON for more than one second. Then the manual adjusting mode will appear.
Once the manual adjusting mode has appeared, the manual adjusting mode is set and maintained irrespective of the positions of the Rewind Switch and Release Switch.
The Release Switch is used at data write, operation selection and item change.
Upon successful setting of the manual adjusting mode, the display indicates the adjustment item No. 1 in each mode. (Modes and adjustment item Nos. are described later.)



< Procedure for Setting of Manual Adjusting Mode >

1) Turn ON the Main Switch.
   ↓
2) Open the Back Cover.
   ↓
3) Press the Rewind Button. (Rewind Switch turns ON.)
   ↓ Within 2 seconds while pressing the Rewind Button
4) Press the Shutter Release Button. (Release Switch turns ON.)
   ↓ After passage of more than one second
5) The Display Panel indicates a manual adjusting mode display.



2. Completion of Manual Adjusting Mode

By one of the following operations, the transition from the manual adjusting mode to the normal mode occurs. However, the data is not stored in memory.

- Detection of the turning OFF of the Main Switch
- Detection of the closing of the Back Cover
- Unloading and loading of the batteries

After this transition, the indications, mode and data will be the same as those restored by the reset operation.

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3. Items in Manual Adjusting Mode and Their Description

In the manual adjusting mode, select an item by a combination of the setting position of the ABC Lever, the setting position of the Metering Mode Select Lever and the operation of the UP/DOWN Button.

(1) Selection of Adjusting Mode

Select an Adjusting Mode by a combination of the setting positions of the ABC Lever and Metering Mode Select Lever. Table 1 below shows the relationship between the setting positions of the ABC Lever and Metering Mode Select Lever and the Adjusting Mode Codes (A, B, C, D, E, F and G) :

Table 1 Setting Positions of ABC Lever and Metering Mode Select Lever and Adjusting Mode Codes

		Setting Position of ABC Lever		
		0	±0.5	±1.0
Setting position of Metering Mode Select Lever	Spot metering	A	D	G
	Average metering	B	E	
	Evaluative metering	C	F	

A, B, C, D : Indication of adjusted value
E : Indication of A/D value
F : Indication of backup data
G : Indication by semiautomatic adjustment

(2) Items in Adjusting Modes and Their Description

Table 2. Adjustment Items in Manual Adjusting Mode and Description of Adjustments (Part 1)

Item No. (Hex.)	Description	Item No. (Hex.)	Description
A – 0	Writing in EEPROM	B – 0	Writing in EEPROM
A – 1	Adjusted value for TTL Flash Auto control	B – 1	Adjusted value 1 for shutter resistance
A – 2	Adjusted value for shutter time	B – 2	Adjusted value 2 for shutter resistance
A – 3	Adjusted value for shutter delay	B – 3	Adjusted value 3 for shutter resistance
A – 4	Adjusted value 2 for winding brake by reverse run (for stop)	B – 4	Adjusted value 1 for exp. compensation resistance
A – 5	Adjusted value 1 for charge (brake delay)	B – 5	Adjusted value 2 for exp. compensation resistance
A – 6	Adjusted value 2 for charge (brake time)	B – 6	Adjusted value 3 for exp. compensation resistance
A – 7	Battery adjustment 1 (without load B2)	B – 7	Adjusted value 1 for aperture resistance
A – 8	Battery adjustment 2 (with load B2)	B – 8	Adjusted value 2 for aperture resistance
A – 9	Battery adjustment 3 (without load B1 – B2)	B – 9	Adjusted value 3 for aperture resistance
A – A	Battery adjustment 4 (with load B1 – B2)	B – A	Adjusted value for light metering distribution open F2.8 (pattern A)
A – b	Adjusted value for output level at shutter closing	B – b	Adjusted value for light metering distribution open F3.5 (pattern A)
A – c	Adjusted value for unexposure error count	B – c	Adjusted value for light metering distribution open F4.0 (pattern A)
A – d	Aperture delay pulse 1	B – d	Adjusted value for light metering distribution open F5.6 (pattern A)
A – E	Aperture delay pulse 2	B – E	Adjusted value for temperature sensor
A – F	Aperture delay pulse 3	B – F	Adjusted value for light metering temperature

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Table 3. Adjustment Items in Manual Adjusting Mode and Description of Adjustments (Part 2)

Item No. (Hex.)	Description	Item No. (Hex.)	Description
C – 0	Writing in EEPROM	D – 0	Writing in EEPROM
C – 1	Adjusted value for imprinting time	D – 1	Snow mountain compensation judgment brightness
C – 2	Exposure adjustment shift value	D – 2	Adjusted value for light metering distribution open F2.4 (pattern D, E)
C – 3	Average light metering shift value	D – 3	Adjusted value for light metering distribution open F3.5 (pattern D, E)
C – 4	Spot light metering shift value	D – 4	Adjusted value for light metering distribution open F4.0 (pattern D, E)
C – 5	Adjusted value 1 for SPD A	D – 5	Adjusted value for light metering distribution open F5.6 (pattern D, E)
C – 6	Adjusted value 2 for SPD A	D – 6	Exposure shift value for service station
C – 7	Adjusted value 1 for SPD B	D – 7	Adjusted value for exposure detection
C – 8	Adjusted value 2 for SPD B	D – 8	Adjusted value 1 for winding brake by reverse run (for slow down)
C – 9	Adjusted value 1 for SPD C	D – 9	Adjusted value for winding pulse drive time
C – A	Adjusted value 2 for SPD C	D – A	Not used
C – b	Adjusted value 1 for SPD D	D – b	
C – c	Adjusted value 2 for SPD D	D – c	
C – d	Adjusted value 1 for SPD E	D – d	
C – E	Adjusted value 2 for SPD E	D – E	
C – F	Evaluative metering judgment brightness	D – F	
E – 0	Writing in EEPROM		
E – 1	A/D indication of battery check (without load)		
E – 2	A/D indication of shutter (unexposure detection)		
E – 3	A/D indication of winding perforation		
E – 4	A/D indication of aperture resistance		
E – 5	A/D indication of Mode Dial		
E – 6	A/D indication of Shutter Dial		
E – 7	A/D indication of Exp. Compensation Dial		
E – 8	A/D indication of temperature		
E – 9	A/D indication of light metering terminal (VR2)		
E – A	A/D indication of SPD A		
E – b	A/D indication of SPD B		
E – c	A/D indication of SPD C		
E – d	A/D indication of SPD D		
E – E	A/D indication of SPD E		
E – F	Not used		

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Table 4. Adjustment Items in Manual Adjusting Mode and Description of Adjustments (Part 3)

Item No. (Hex.)	Description	Range of Adjusted (Displayed) Value
F – 0	Writing in EEPROM	00 (blinking at writing of adjusted value)
F – 1	Shots counter L	00 ~ FF (0 ~ 255 shots)
F – 2	Shots counter M	00 ~ 03 (0 ~ 1,023 shots)
F – 3	Shots counter H	00 ~ 99 (0 ~ 101,376 shots) (decimal notation)
F – 4	ISO setting value	00 ~ 1F (ISO 6 ~ ISO 6400)
F – 5	Error code	00 ~ 06
F – 6	Film threshold level L	
F – 7	Film threshold level H	
F – 8	Unexposure error counter	00 ~ (decimal notation)
F – 9	SHCOUT at unexposure error	
F – A	Status information L	
F – b	Status information H	
F – c	Contents of option setting	
F – d	Adjusted value for charge release brake time	
F – E	CPU version	ROM version (Superior-order : CPU1 ; Inferior-order : CPU2)
F – F	Erasure of all data in EEPROM	00 (blinking during all data erasure)

Table 5. Adjustment Items in Manual Adjusting Mode and Description of Adjustments (Part 4)

Item No. (Hex.)	Description	Displayed
G – 0	Writing in EEPROM	00 (blinking at writing of adjusted value)
G – 1	Semiautomatic adjustment of shutter resistance	See "Semiautomatic Adjustment Mode"
G – 2	Semiautomatic adjustment of exp. compensation resistance	See "Semiautomatic Adjustment Mode"
G – 3	Semiautomatic adjustment of aperture resistance	See "Semiautomatic Adjustment Mode"
G – 4	Semiautomatic adjustment of unexposure detect level	See "Semiautomatic Adjustment Mode"
G – 5	Whole LCD lighting	00 (whole lighting or 00 indication occurs alternately at each Release SW "ON")
G – 6 G – 7 G – 8 G – 9 G – A G – b G – c G – d G – E	Not used	00
G – F		0、1 (0 or 1 is displayed alternately at each Release SW "ON") (Writing is not allowed at G – 0)

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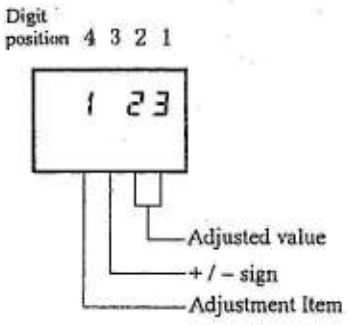
4. Display, Change and Storage of Adjusted Value

(1) Display of Adjusted Value

Adjusted values are generally displayed by hexadecimal notations but some adjusted values are decimal notations depending on adjustment items.



① 4th digit : Indicates the adjustment item number. The hexadecimal numbers of 0 to F represent 16 adjustment items.
* Initial display : " 1 "

② 3rd digit : [Hexadecimal notation] Always blank.
[Decimal notation] Indicates the plus or minus sign of the number indicated at the 1st and 2nd digit positions. However, the plus is represented by a blank and the minus is represented by "–".
* Initial display : " " (blank)

③ 1st and 2nd digits: Indicate the adjusted value of the selected adjustment item.
[Hexadecimal notation] Indicate 00 ~ FF. Initial display : 00
[Decimal notation] Adjusted values including the sign described at ② above are represented in the range of – 99 to + 99. Initial display : 00

④ Adjustment items for which the adjusted value is displayed by decimal notation.
- F – 3 (Shots counter : superior-order), F – 8 (Unexposure error counter)

(2) Change of Adjustment Item and Adjusted Value

(2) - 1. Change of Adjustment Item

Pressing the UP Button to turn ON the UP Switch will increment the adjustment item number and pressing the DOWN Button to turn ON the DOWN Switch will decrement the adjustment item number. One press of the UP or DOWN Button will change the adjustment item one time. The display will not change even by pressing the DOWN Button at " 0 " or UP Button at " F ".

(2) - 2. Change of Adjusted Value

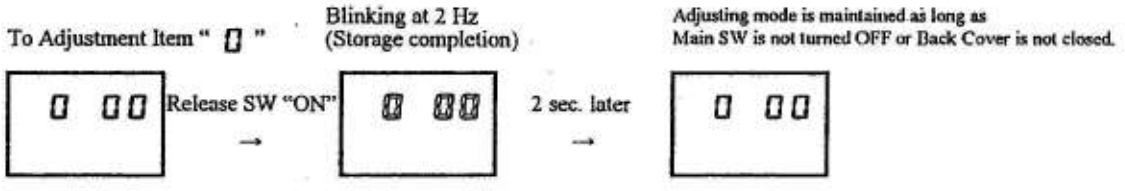
Change the adjusted value of the adjustment item selected in(2)-1. The adjusted value obtained by the previous adjustment is displayed first. Then adjust the displayed value (initial value is " 00 "). To change the adjusted value, set the Main Switch in the "AEL" position and press the UP or DOWN Button. Pressing the UP Button to turn ON the UP Switch will increment the adjusted value and pressing the DOWN Button to turn ON the DOWN Switch will decrement the adjusted value.

One press of the UP or DOWN Button will change the adjusted value one time. The upper and lower limits of adjusted values vary with the adjustment item. Keeping the UP or DOWN Button pressed (for more than 1.2 seconds) will change the value as rapidly as at eight times a second.

(3) Storage

Return the adjustment item display to " 0 " and turn ON the Release Switch, and the adjusted values for all the adjustment items will be written in EEPROM whether some or no adjusted values have been changed. Item " 0 " means memory mode, where the adjusted value indicating area of the display always shows " 00 ".

After turning ON the Release Switch, the display blinks at 2 Hz for 2 seconds.


To Adjustment Item " 0 "
Blinking at 2 Hz (Storage completion)
Adjusting mode is maintained as long as Main SW is not turned OFF or Back Cover is not closed.
0 00
Release SW "ON"
0 00
2 sec. later
0 00

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C-2-2. Adjustment Procedure

1. Semiautomatic Adjustment Mode (Adjustment Item G – 1~4)

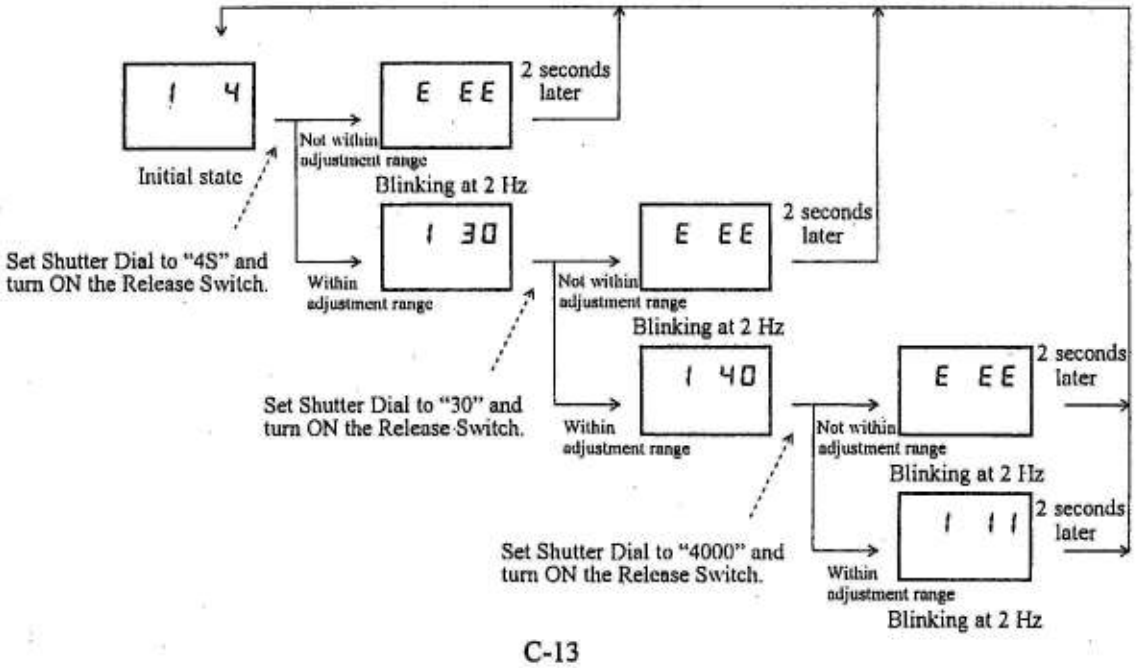
* Use this mode to adjust the relationship between the setting positions of Dials and A/D converted values.

(1) Semiautomatic Adjustment of Shutter Resistance (Adjustment Item G – 1)

* Make this adjustment to set the adjusted values 1, 2 and 3 for the shutter resistance.
* Perform the operations 1) to 5) described below, and the camera will automatically calculate and write the adjusted values for the shutter resistance reference value and shutter resistance inclination. (There is no need of returning the adjustment item to 0 .)

< Adjustment Procedure >

1) Set the manual adjusting mode.
2) Set the ABC Lever to "± 1.0" and set the adjustment item to G – 1 . In the initial state, the 7-segment display will indicate 1 4 .
3) Set the Shutter Dial in the "4s" position and turn ON the Release Switch.
   The voltage from the shutter resistor is A/D converted and the adjusted value 1 for the shutter resistance will be obtained.
   When the adjusted value 1 for the shutter resistance is within the adjustment range, the display will change to 1 30. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2-Hz, for two seconds and then return to the initial state.
4) With the display indicating 1 30, set the Shutter Dial in the "30" position and turn ON the Release Switch.
   The voltage from the shutter resistor will be A/D converted and the adjusted value 2 for the shutter resistance will be obtained.
   When the adjusted value 2 for the shutter resistance is within the adjustment range, the display will change to 1 40. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then return to the initial state.
5) With the display indicating 1 40, set the Shutter Dial in the "4000" position and turn ON the Release Switch. The voltage from the shutter resistor will be A/D converted and the adjusted value 3 for the shutter resistance will be obtained.
   When the adjusted value 3 for the shutter resistance is within the adjustment range, the adjusted values 1, 2 and 3 for the shutter resistance will automatically be written in EEPROM. The display will indicate 1 1, blinking at 2 Hz, for two seconds to show the execution of writing and then return to the initial state. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then return to the initial state.


1 4
Initial state
Set Shutter Dial to "4S" and turn ON the Release Switch.
E EE
Not within adjustment range
Blinking at 2 Hz
2 seconds later
1 30
Within adjustment range
Set Shutter Dial to "30" and turn ON the Release Switch.
E EE
Not within adjustment range
Blinking at 2 Hz
2 seconds later
1 40
Within adjustment range
Set Shutter Dial to "4000" and turn ON the Release Switch.
E EE
Not within adjustment range
Blinking at 2 Hz
2 seconds later
1 11
Within adjustment range
Blinking at 2 Hz

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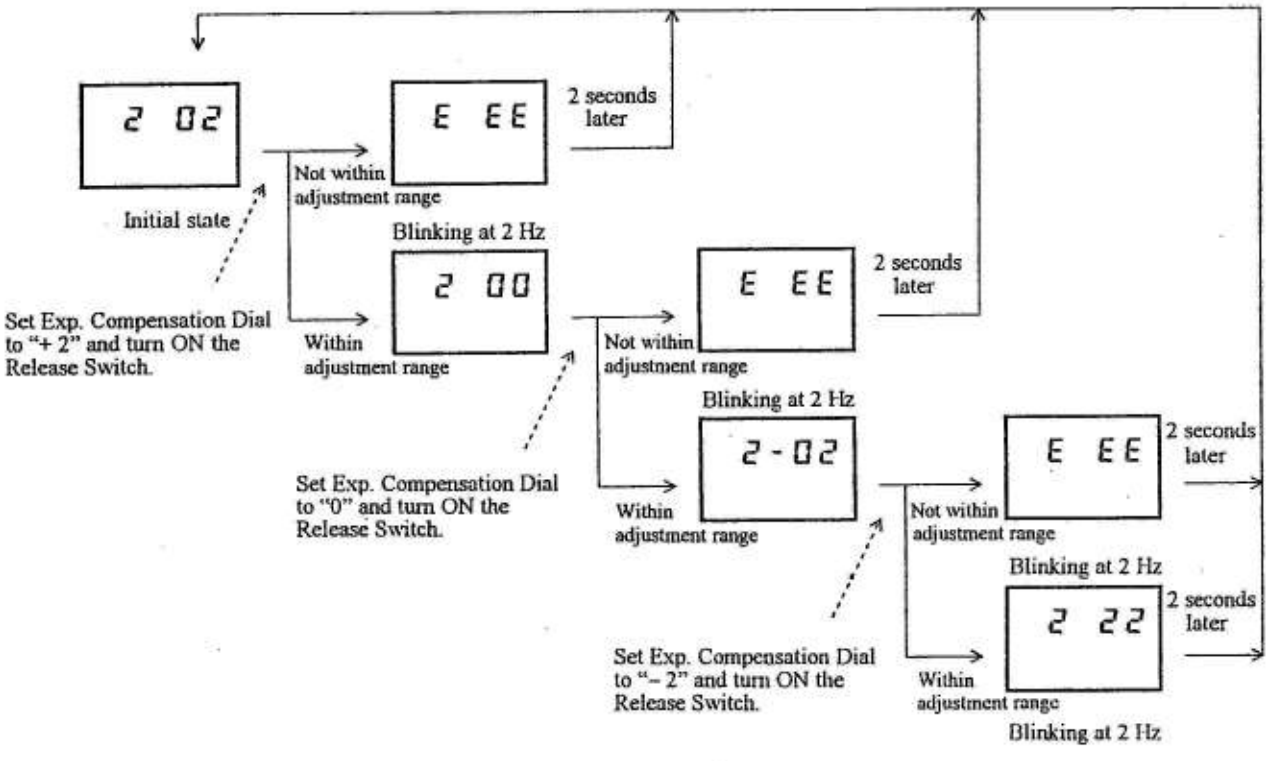
(2) Semiautomatic Adjustment of Exposure Compensation Resistance (Adjustment Item G – 2)

* Make this adjustment to set the adjusted values 1, 2 and 3 for the exposure compensation resistance.
* Perform the operations 1) to 4) described below, and the camera will automatically calculate and write the adjusted values for the exposure compensation resistance reference value and exposure compensation resistance inclination. (There is no need of returning the adjustment item to 0 .)

< Adjustment Procedure >

1) In the manual adjusting mode, set the adjustment item to G – 2 by pressing the UP Button. In the initial state, the 7-segment display will indicate 2 02 .
2) Set the Exposure Compensation Dial in the "+ 2" position and turn ON the Release Switch.
   The voltage from the exposure compensation resistor is A/D converted and the adjusted value 1 for the exposure compensation resistance will be obtained.
   When the adjusted value 1 for the exposure compensation resistance is within the adjustment range, the display will change to 2 00. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then return to the initial state.
3) With the display indicating 2 00, set the Exposure Compensation Dial in the "0" position and turn ON the Release Switch. The voltage from the exposure compensation resistor will be A/D converted and the adjusted value 2 for the exposure compensation resistance will be obtained.
   When the adjusted value 2 for the exposure compensation resistance is within the adjustment range, the display will change to 2 - 02. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then return to the initial state.
4) With the display indicating 2 - 02, set the Exposure Compensation Dial in the "– 2" position and turn ON the Release Switch. The voltage from the exposure compensation resistor will be A/D converted and the adjusted value 3 for the exposure compensation resistance will be obtained.
   When the adjusted value 3 for the exposure compensation resistance is within the adjustment range, the adjusted values 1, 2 and 3 for the exposure compensation resistance will automatically be written in EEPROM. The display will indicate 2 22, blinking at 2 Hz, for two seconds to show the execution of writing and then return to the initial state. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then return to the initial state.


2 02
Initial state
E EE
Not within adjustment range
Blinking at 2 Hz
2 seconds later
2 00
Within adjustment range
Set Exp. Compensation Dial to "+ 2" and turn ON the Release Switch.
E EE
Not within adjustment range
Blinking at 2 Hz
2 seconds later
2 - 02
Within adjustment range
Set Exp. Compensation Dial to "0" and turn ON the Release Switch.
E EE
Not within adjustment range
Blinking at 2 Hz
2 seconds later
2 22
Within adjustment range
Set Exp. Compensation Dial to "– 2" and turn ON the Release Switch.
Blinking at 2 Hz
2 seconds later

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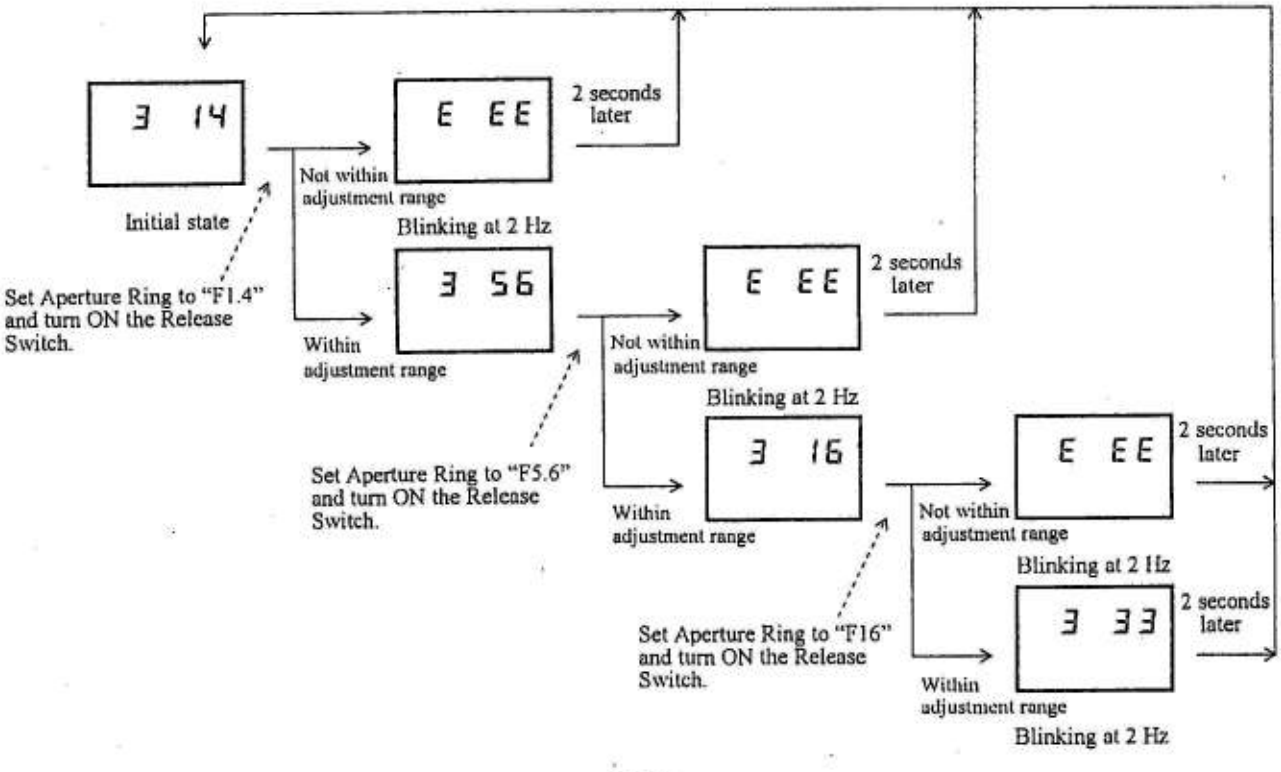
(3) Semiautomatic Adjustment of Aperture Resistance (Adjustment Item G – 3)

* Make this adjustment to set the adjusted values 1, 2 and 3 for the exposure aperture resistance.
* Perform the operations 1) to 5) described below, and the camera will automatically calculate and write the adjusted values for the aperture resistance reference value and aperture resistance inclination. (There is no need of returning the adjustment item to 0 .)
* With the Planar 50 mm/F1.4 MM lens mounted, perform the following operations :

< Adjustment Procedure >

1) Set the Lens (Planar 50 mm/F1.4) on the camera.
2) In the manual adjusting mode, set the adjustment item to G – 3 by pressing the UP Button. In the initial state, the 7-segment display will indicate 3 14 .
3) Set the Aperture Ring in the "F1.4" position and turn ON the Release Switch.
   The voltage from the aperture resistor is A/D converted and the adjusted value 1 for the aperture resistance will be obtained.
   When the adjusted value 1 for the aperture resistance is within the adjustment range, the display will change to 3 56. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then return to the initial state.
4) With the display indicating 3 56, set the Aperture Ring in the "F5.6" position and turn ON the Release Switch. The voltage from the aperture resistor will be A/D converted and the adjusted value 2 for the aperture resistance will be obtained.
   When the adjusted value 2 for the aperture resistance is within the adjustment range, the display will change to 3 16. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then return to the initial state.
5) With the display indicating 3 16, set the Aperture Ring in the "F16" position and turn ON the Release Switch. The voltage from the aperture resistor will be A/D converted and the adjusted value 3 for the aperture resistance will be obtained.
   When the adjusted value 3 for the aperture resistance is within the adjustment range, the adjusted values 1, 2 and 3 for the aperture resistance will automatically be written in EEPROM. The display will indicate 3 33, blinking at 2 Hz, for two seconds to show the execution of writing and then return to the initial state. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then return to the initial state.



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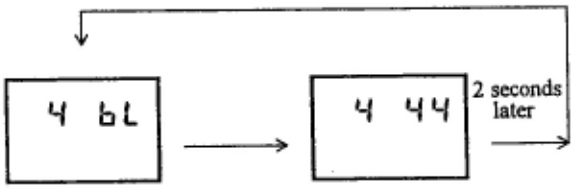
(4) Semiautomatic Adjustment of Unexposure Detection Level (Adjustment Item G – 4)

* Adjusted value for output level at shutter closing

< Adjustment Procedure >

1) In the manual adjusting mode, set the adjustment item to G – 4 by pressing the UP Button. In the initial state, the 7-segment display will indicate 4 bL .
2) Under these conditions, turn ON the Release Switch. The outputs from the photo-reflector for unexposure detection before the first curtain travel and before the second curtain travel are A/D converted. Then from the A/D converted values, the adjusted value for output level at shutter closing is obtained and written in EEPROM. The display will indicate 4 44, blinking at 2 Hz, for two seconds to show the execution of writing and then return to the initial state.



Blinking at 2 Hz

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2. Exposure Adjustments

* In manual adjustments, the adjustment items A－1～A－3、A－d～A－F、C－2～C－E relate to exposure adjustments. When any of these adjustment items has been selected, turning ON the Release Switch will start a shutter release sequence. This sequence, however, is different from the shutter release sequence in the normal mode in that the battery check is not performed. Therefore, special attention must be paid to the power supply.
* The exposure adjustments include the adjustments of the adjusted values 1 and 2 for SPDs A to E and the adjustment of the average metering shift value. Before making these adjustments, be sure to make the shutter time adjustment.
  The exposure adjustments must be made in the order of (1) to (4) below. If they are performed in a wrong order, the adjustments can not be achieved correctly.
* The adjusted values can be written in EEPROM one by one by storage operation after each adjusted value change or all together after the adjustment of aperture delay pulse 3 at (3). The adjusted value for TTL Flash Auto control at (4) must be stored after each change of the adjusted value, since the adjustment is made only with the Back Cover closed.

< Operations before Adjustments >

① Make certain that the values for the adjustment items C－2～4 and D－6 are both "0". If they are not "0", change them to "0".
② Write the changed adjusted values in EEPROM.

(1) Adjusted Value for Shutter Time (Adjustment Item A－2)

< Tools for Adjustment >
- AE camera tester (EF8000, EF5000)

< Adjustment Procedure >
1) Set the manual adjusting mode.
2) Set the Metering Mode Select Lever in the spot metering position and set the ABC Lever in the "0" position.
3) Set adjustment item A－2 (shutter time adjustment) by pressing the UP Button.
4) With the Back Cover open, set the camera on the AE camera tester.
5) Set the Exposure Mode Select Lever to "M" (Manual) and the Shutter Dial to "2000".
6) Turn ON the Release Switch to execute shutter release sequence. At this time, check the time Tm displayed on the AE camera tester.
   If the time Tm displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button.

   When Tm is slow : Decrement the adjusted value by pressing the DOWN Button.
   When Tm is fast : Increment the adjusted value by pressing the UP Button.

   Standard range : – 64 to 64

   Allowable range at 1/2000 : ± 0.3 EV

7) Set the Shutter Dial to "4000" and execute shutter release sequence. Then make certain that the value is within the allowable range.

   Allowable range at 1/4000 : ± 0.6 EV

8) Set the Main Switch in the "ON" position and set adjustment item A－0 by pressing the DOWN Button.
9) Write the adjusted value in EEPROM by turning ON the Release Switch.

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Table 6. Allowable Range of Manual Exposure Time

Shutter Speed	+	Reference Value	−
X	8.37	7.81	7.29
1"	1035	1000	966
1/2	517.6	500	483.0
1/4	258.8	250	241.5
1/8	134.0	125	116.6
1/15	66.99	62.50	58.32
1/30	33.55	31.30	29.20
1/60	16.75	15.63	14.58
1/125	8.37	7.81	7.29
1/250	4.81	3.91	3.17
1/500	2.40	1.95	1.58
1/1000	1.21	0.98	0.80
1/2000	0.644	0.49	0.370
1/4000	0.383	0.244	0.156

(Unit : ms)

* Curtain Travel Speed

a) The travel speeds of the first curtain and second curtain are both such that each curtain takes about 4.8 ms to travel the vertical length of 24 mm (sensing point of spot light source tester : 21 mm).
b) The curtain travel speed can not be adjusted. Therefore, replace the Shutter Unit with a new one if the travel speed of each curtain is significantly different from the specified value.

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(2) SPD Adjustments

* Mount the Planar 50 mm/F1.4 MM Lens on the camera and with the Back Cover open, set the camera on the AE camera tester. In this state, make the adjustments (2) - 1 to (2) - 10 below.

Table 7. Relationship between Adjusted Values for SPDs and Adjustment Item Nos.

	SPD A	SPD B	SPD C	SPD D	SPD E
Adjusted value 1	C – 5	C – 7	C – 9	C – b	C – d
Adjusted value 2	C – 6	C – 8	C – A	C – c	C – E

Table 8. Allowable Range of Light Exposure Values

Brightness (LV)	Allowable Range
LV 9	– 0.5 ~ +0.5 EV
LV 15	– 0.5 ~ +0.5 EV

K value : 1.04 ; ISO 100

< Tools for Adjustments >

- AE camera tester (EF-8000, EF-5000)
- Planar 50 mm/F1.4 MM Lens

(2)-1. Adjusted Value 1 for SPD A (Adjustment Item C – 5)

< Adjustment Procedure >

1) Set the manual adjusting mode.
2) Mount the Lens (Planar 50 mm/F1.4) on the camera.
3) Set the Metering Mode Select Lever in the evaluative metering position and set the ABC Lever in the "0" position.
4) Set adjustment item C – 5.
5) Set the Exposure Mode Select Lever to "AV", the aperture to F5.6 and the brightness of the AE camera tester to LV 9.
6) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button.
   When △EV is over : Decrement the adjusted value by pressing the DOWN Button.
   When △EV is under : Increment the adjusted value by pressing the UP Button.
7) Set the Main Switch in the "ON" position and set adjustment item C – 0 by pressing the DOWN Button.
8) Write the adjusted value in EEPROM by turning ON the Release Switch.

(2)-2. Adjusted Value 2 for SPD A (Adjustment Item C – 6)

1) Set the Main Switch in the "ON" position.
2) Set adjustment item C – 6.
3) Set the brightness of the AE camera tester to LV 15.
4) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button.
5) Set the Main Switch in the "ON" position and set adjustment item C – 0 by pressing the DOWN Button.
6) Write the adjusted value in EEPROM by turning ON the Release Switch.

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(2)-3. Adjusted Value 1 for SPD B (Adjustment Item C – 7)

1) Set the Main Switch in the "ON" position.
2) Set adjustment item C – 7.
3) Set the brightness of the AE camera tester to LV 9.
4) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button.
5) Set the Main Switch in the "ON" position and set adjustment item C – 0 by pressing the DOWN Button.
6) Write the adjusted value in EEPROM by turning ON the Release Switch.

(2)-4. Adjusted Value 2 for SPD B (Adjustment Item C – 8)

1) Set the Main Switch in the "ON" position.
2) Set adjustment item C – 8.
3) Set the brightness of the AE camera tester to LV 15.
4) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button.
5) Set the Main Switch in the "ON" position and set adjustment item C – 0 by pressing the DOWN Button.
6) Write the adjusted value in EEPROM by turning ON the Release Switch.

(2)-5. Adjusted Value 1 for SPD C (Adjustment Item C – 9)

1) Set the Main Switch in the "ON" position.
2) Set adjustment item C – 9.
3) Set the brightness of the AE camera tester to LV 9.
4) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button.
5) Set the Main Switch in the "ON" position and set adjustment item C – 0 by pressing the DOWN Button.
6) Write the adjusted value in EEPROM by turning ON the Release Switch.

(2)-6. Adjusted Value 2 for SPD C (Adjustment Item C – A)

1) Set the Main Switch in the "ON" position.
2) Set adjustment item C – A.
3) Set the brightness of the AE camera tester to LV 15.
4) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button.
5) Set the Main Switch in the "ON" position and set adjustment item C – 0 by pressing the DOWN Button.
6) Write the adjusted value in EEPROM by turning ON the Release Switch.

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(2)-7. Adjusted Value 1 for SPD D (Adjustment Item C – b)

1) Set the Main Switch in the "ON" position.
2) Set adjustment item C – b.
3) Set the brightness of the AE camera tester to LV 9.
4) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button.
5) Set the Main Switch in the "ON" position and set adjustment item C – 0 by pressing the DOWN Button.
6) Write the adjusted value in EEPROM by turning ON the Release Switch.

(2)-8. Adjusted Value 2 for SPD D (Adjustment Item C – c)

1) Set the Main Switch in the "ON" position.
2) Set adjustment item C – c.
3) Set the brightness of the AE camera tester to LV 15.
4) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button.
5) Set the Main Switch in the "ON" position and set adjustment item C – 0 by pressing the DOWN Button.
6) Write the adjusted value in EEPROM by turning ON the Release Switch.

(2)-9. Adjusted Value 1 for SPD E (Adjustment Item C – d)

1) Set the Main Switch in the "ON" position.
2) Set adjustment item C – d.
3) Set the brightness of the AE camera tester to LV 9.
4) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button.
5) Set the Main Switch in the "ON" position and set adjustment item C – 0 by pressing the DOWN Button.
6) Write the adjusted value in EEPROM by turning ON the Release Switch.

(2)-10. Adjusted Value 2 for SPD E (Adjustment Item C – E)

1) Set the Main Switch in the "ON" position.
2) Set adjustment item C – E.
3) Set the brightness of the AE camera tester to LV 15.
4) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button.
5) Set the Main Switch in the "ON" position and set adjustment item C – 0 by pressing the DOWN Button.
6) Write the adjusted value in EEPROM by turning ON the Release Switch.

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(3) Adjustments of Aperture Delay Pulse

< Tools for Adjustment >

- AE camera tester (EF-8000, EF-5000)
- Planar 50 mm/F1.4 MM Lens

(3)-1. Aperture Delay Pulse 1 (Adjustment Item A – d)

< Adjustment Procedure >

1) Set the manual adjusting mode.
2) Mount the Lens (Planar 50 mm/F1.4) on the camera.
3) Set the Metering Mode Select Lever in the spot metering position and set the ABC Lever in the "0" position.
4) Set adjustment item A – d.
5) Set the Exposure Mode Select Lever to "TV", the Shutter Dial to "125" and the aperture to the minimum aperture (F16). (The light metering system is set to center-weighted average metering.)
6) Set the brightness of the AE camera tester to LV 9.
7) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button so that the variance is nearly 0 EV.

   When △EV is over : Decrement the adjusted value by pressing the DOWN Button.
   When △EV is under : Increment the adjusted value by pressing the UP Button.

   Standard range : – 12 to 12
8) Set the Main Switch in the "ON" position and set adjustment item A – 0 by pressing the DOWN Button.
9) Write the adjusted value in EEPROM by turning ON the Release Switch.

(3)-2. Aperture Delay Pulse 2 (Adjustment Item A – E)

1) Set the Main Switch in the "ON" position.
2) Set adjustment item A – E.
3) Set the brightness of the AE camera tester to LV 12.
4) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button so that the variance is nearly 0 EV.
5) Set the Main Switch in the "ON" position and set adjustment item A – 0 by pressing the DOWN Button.
6) Write the adjusted value in EEPROM by turning ON the Release Switch.

(3)-3. Aperture Delay Pulse 3 (Adjustment Item A – F)

1) Set the Main Switch in the "ON" position.
2) Set adjustment item A – F.
3) Set the brightness of the AE camera tester to LV 15.
4) Turn ON the Release Switch to execute shutter release sequence. At this time, check the light exposure variance △EV displayed on the AE camera tester.
   If the light exposure variance △EV displayed on the AE camera tester is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button so that the variance is nearly 0 EV.
5) Set the Main Switch in the "ON" position and set adjustment item A – 0 by pressing the DOWN Button.
6) Write the adjusted value in EEPROM by turning ON the Release Switch.

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(4) Adjustment of TTL Flash Auto Control Value (Adjustment Item A − 1)

* Make the adjustment of TTL direct flash metering for use of a Flash Unit of the TLA system.
* Set the Lens and Flash Unit on the camera, measure the TTL Flash Auto control value △EV with a flash meter and change the adjusted value to optimize the TTL Flash Auto control value.
* When measuring the TTL Flash Auto control value, use a standard reflector paper (gray chart with a reflectivity of 18 %) as the subject and prevent the entrance of external light.

< Tools for Adjustment >

- Flash meter
- Planar 50 mm/F1.4 MM Lens
- Flash unit of TLA system
- Tripod
- Standard reflector paper (gray chart with a reflectivity of 18 %)

< Adjustment Procedure >

1) Load the film (Ektachrome 64) in the camera.
2) Mount the lens (Planar 50 mm/F1.4) and a flash unit (flash unit of TLA system) on the camera.
3) Mount the camera on the tripod.
4) Fix the standard reflector paper and set the flash meter.
5) Place the tripod at 2 m from the standard reflector paper.
6) Set the aperture for the lens to F 4.0.
7) Set the Exposure Mode Select Lever of the camera to "AV" and the ISO film speed to "ISO 100".
8) Turn ON the Release Switch to execute shutter release sequence and fire the flash. Then measure the deviation of the TTL Flash Auto control value △EV with the flash meter.
9) Set the manual adjusting mode.
10) Set adjustment item A − 1 and change the adjusted value.
    If the TTL Flash Auto control value △EV displayed on the flash meter is not within the standard range relative to the reference value, set the Main Switch in the "AEL" position and make adjustment by pressing the UP or DOWN Button.
11) Set the Main Switch in the "ON" position and set adjustment item A − 0 by pressing the DOWN Button.
12) Write the adjusted value in EEPROM by turning ON the Release Switch.
13) Repeat the steps 8) to 12) above until he TTL Flash Auto control value △EV becomes within the range of ± 0.5 EV.

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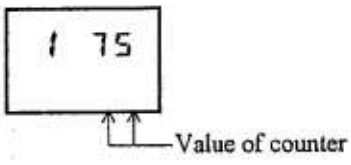
3. About Other Adjusted Values

(1) Shots Counter (Adjustment Item F－1～3)

* Check the total number of shots. Every time the shutter operates, the camera adds one to the value of the shots counter in EEPROM. In these items, the value of the counter is indicated at the 2nd and 1st digit positions of the 7-segment display.



At F－1, the displayed value is incremented every shutter operation. The value is displayed by one of the decimal numbers ranging from 00 to FF.
At F－2, the displayed value is incremented every carry at F－1. The value is displayed by one of the decimal numbers ranging from 00 to 03.
At F－3, the displayed value is incremented every carry at F－2. The value is displayed by one of the decimal numbers ranging from 00 to 99.

Since the value at F－3 is incremented every 1024 shots, the display can be used as a counter that shows a multiple of about 1000 shots.

The values of the shots counters can be changed and written by the same procedure as in the adjusted value setting mode. If the Shutter Unit has been replaced with a new one by servicing, write 00 in the shots counters F－1～3. If the EEPROM is replaced with a new one without replacing the Shutter Unit, read out the shots count from the old EEPROM and write it in the new EEPROM.

(2) Battery Adjustments 1, 2, 3 and 4 (Adjustment Item A－7、8、9、A)

* Since all battery adjustments have been finished at the factory, there is no need of performing any battery adjustments on the service side.
  Do not change the adjusted values.
* The Main FPC Ass'y which is supplied as a service part has already been adjusted.

(3) About the Other Adjusted Values

* Never change any of the other adjusted values.

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C-3. OTHERS

C-3-1. Synchro Contact

① Delay time of X-contact

Sensing point of Shutter Tester: 21 mm
Measure at shutter time "X".

A range : 0.2 ~ 1.0 ms

C range : 1.7 ms or more

② Contact efficiency of X-contact

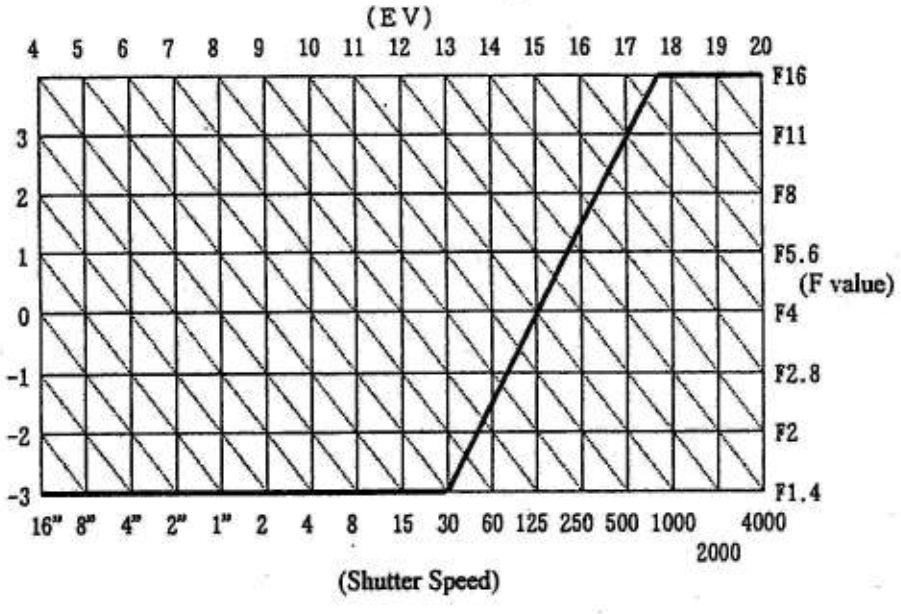
The contact efficiency must be 60% or above at shutter speed of 1/125 sec. (X) or less.
* Use a contact efficiency meter at 1 ms.

C-3-2. Current Consumption

Main Switch OFF (standby current)	25 μA or below	
Main Switch ON		
LCD ON (Power ON)	100 mA or below	
LCD OFF	25 μA or below	
Winding operation	800 mA or below	(Check with film loaded)
Winding stop current	2000 mA or below	(Check with film loaded)
Rewinding operation	500 mA or below	(Check with film loaded)
Release (shutter operation, single frame)	600 mA or below	(Check with film loaded)

C-3-3. Program Control Chart

(At use of F1.4 lens, ISO 100)



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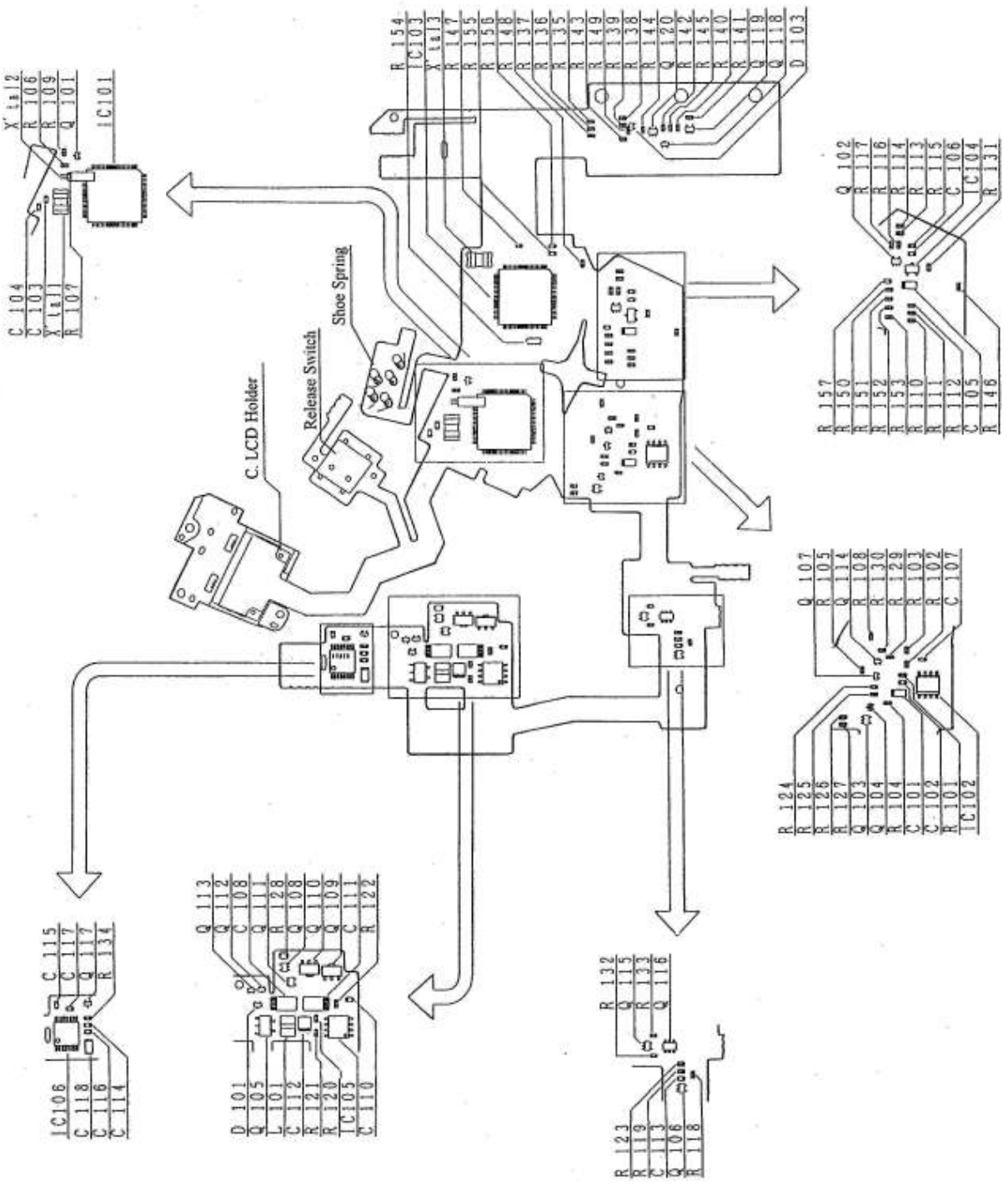
ELECTRIC ELEMENTS LOCATING DIAGRAM ON MAIN FPC ASS'Y



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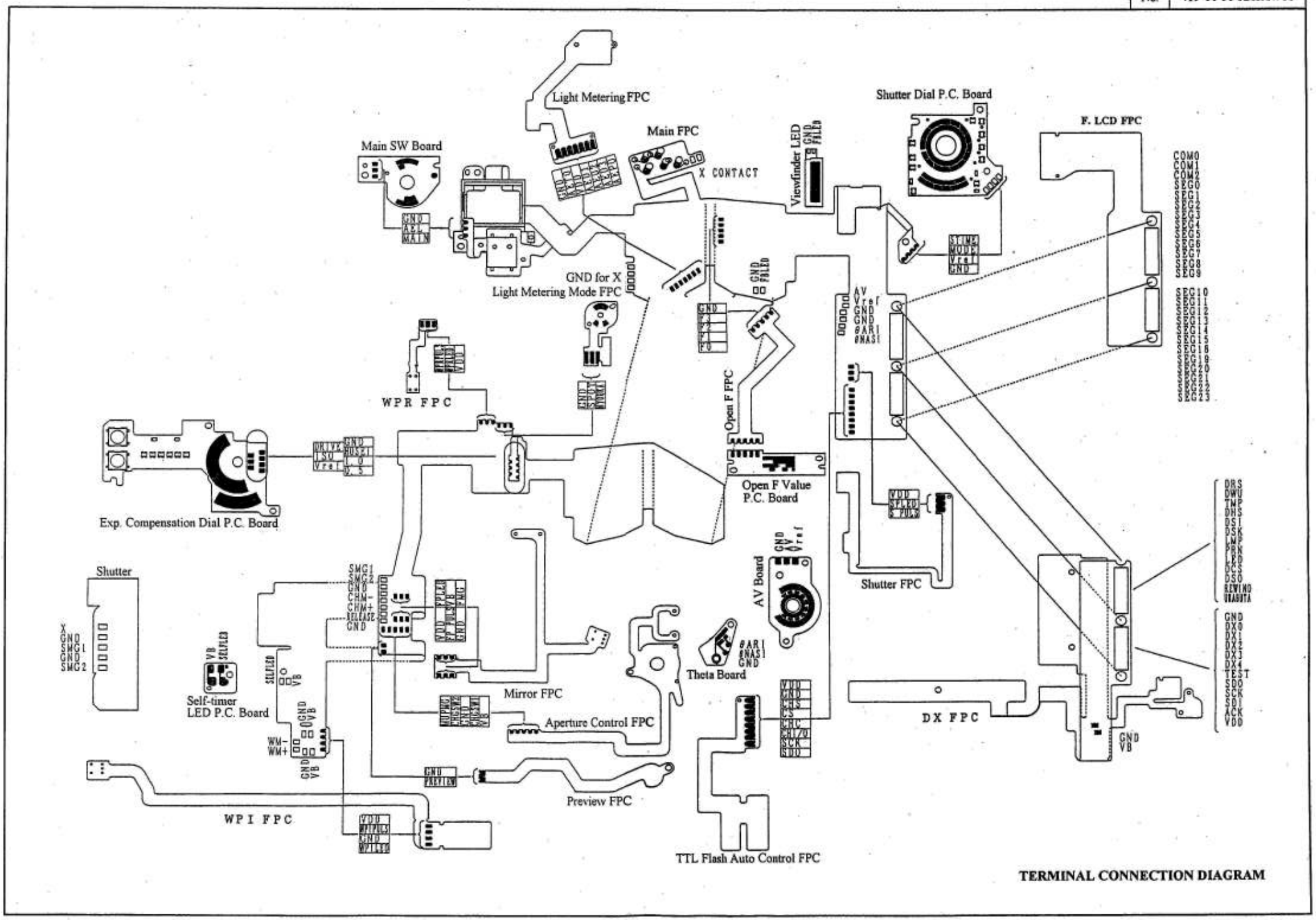

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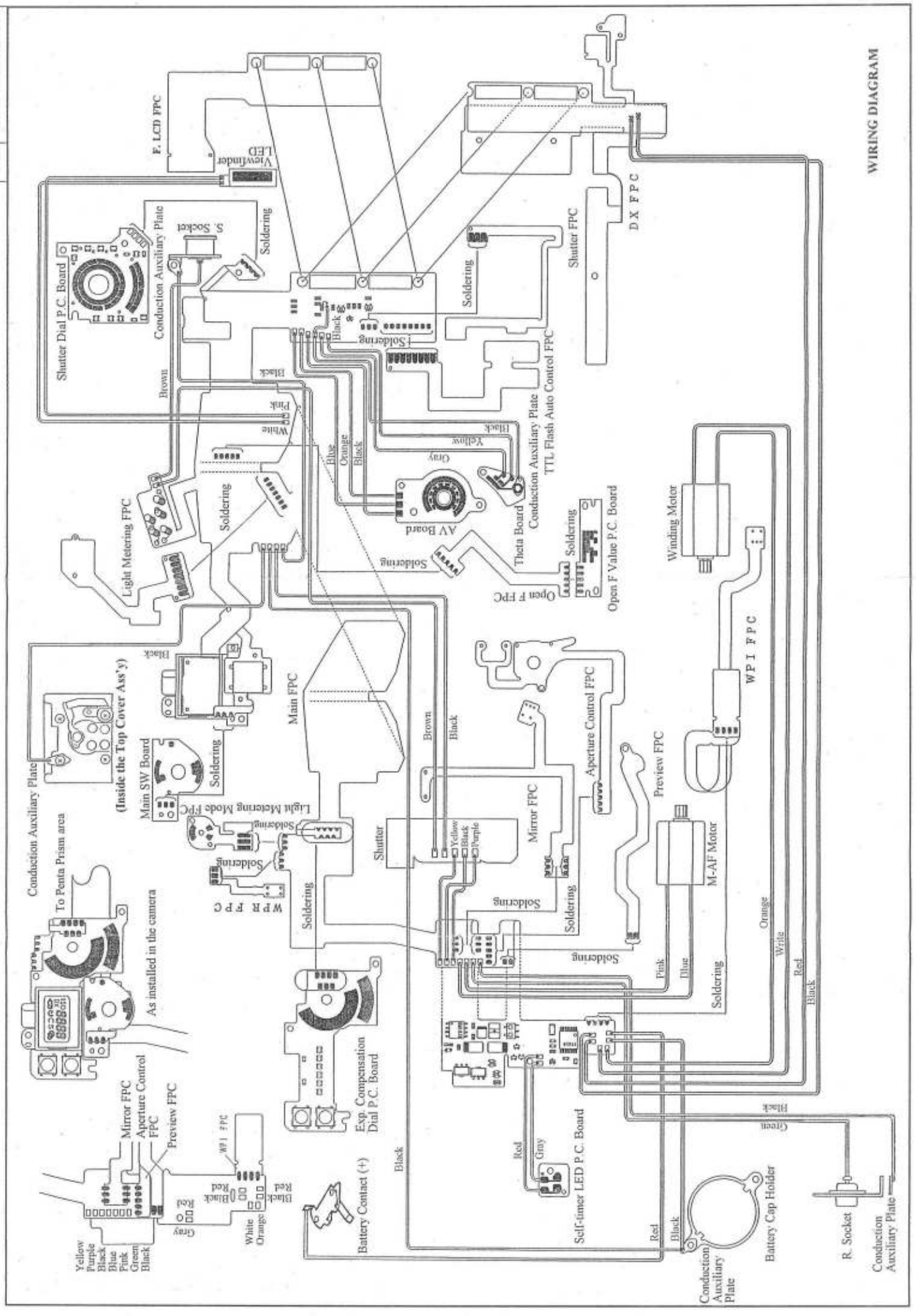

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